

MU'TAH UNIVERSITY
DEANSHIP OF GRADUATE STUDIES

″The Impact of Macroeconomic Factors on the Performance of General Stock Index In Jordan During the Period (1994 – 2009) ″

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A theses submitted to the deanship of Graduate studies
In a partial fulfillment of the requirements for the degree of
Master of Business Administration/ MBA

Mu'tah University 2010

DEDICATION

To the wandering spirits in the sky
To whom protect me with their souls before hands
Who stay with me in adversity before good times
Who share me my joy and sorrows
To whom raise me on the virtue and ethics when they were rare things
To Whom gave me the faith when it is hard to believe
To whom stay with me until I reach what I am today
And I am sure from their being until my soul back to the sky

To
My parents
The soul of my latest beloved Grandmother
My family
My friends
And everyone who stays with me

Manal Mohammad Al-Ateeq

ACKNOWLEDGMENT

In the name of Allah, most gracious, most merciful.
This thesis would not have been possible unless Allah care and inspection.
I am heartily thankful to my supervisor, DR. Rasha Dayyat, whose encouragement, guidance and support from the initial to the final level enabled me to develop this study.
I am grateful to thank the Discussion Committee, DR. Medhat Trawneh, DR. Mousa Mnaseer and DR. Asa'ad Al Ali for their efforts in reviewing this study.
And it is a pleasure to thank the Department of Research in the Central Bank, Department of Research in the Securities Depository Center and the Deanship of graduate studies in Mutah University for their help.
Lastly, I offer my regards and blessings to Mutah University whom supported me during studying and completion of the project.

Manal Mohammad Al-Ateeq

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ABBREVIATIONS

AFM: Amman Financial Market.
AFTA: Arab Free Trade Agreement
ADF: Augmented Dickey–Fuller.
ASE: Amman Stock Exchange.
APT: Arbitrage Pricing Theory.
ARIMA Model : Autoregressive Integrated Moving Average.
BRIC: Brazil, Russia, India, and China.
BSE: Bahrain Stock Exchange
CMA: Capital Market Authority.
DSI: Databank Stock Index.
DSE: Dhaka Stock Exchange.
DSI: Databank Stock Index.
D-W: Durbin – Watson Statistics.
FTA: Jordan - U.S. Free Trade Area Agreement
GDP: Gross Domestic Product.
IFS: International Financial Statistics.
INF: Inflation rate in Jordan.
IP: Industrial Production.
IRF: Impulse Response Function.
ISE: Istanbul Stock Exchange.
JSC: Jordan Securities Commission.
KSE: Karachi Stock Exchange.
KSEP: Karachi Stock Exchange Price.
MS: Money Supply.
MSCI: Morgan Stanley Capital International World Equity Index.
NASDAQ: National Association of Securities Dealers Automated Quotations Systems.
NYSE: New York Stock Exchange.
NZSE40: New Zealand Stock Exchange based on the change in value of the stocks of the 40 largest companies. (QFINANCE Financial Dictionary, 2009)
NR: Interest rate.
OLS: Ordinary Least Square.
QIZ: Qualifying Industrial Zone
QTM: Quantity Theory of Money.
SAMA: Saudi Arabian Monetary Agency
SDC: Securities Depository Center.
SES: Stock Exchange of Singapore.
STI: Singapore Stock market Index.
UK: United Kingdom.

US: United State.
VECM: Vector Error Correction Model.
VDCs: Variance Decompositions.
VAR: Vector Autoregression.
PPI: Producer Price Index
WTO: World Trade Organization

Expressions

1. **Consumer Price Index** (CPI): the most commonly used measure of the cost of living. It measure the cost of a slowly changing basket of consumer goods. (Delong, 2002).
2. **Exchange Rate**: the rate at which the monies of different countries can be exchanged for one another. (Delong, 2002).
3. **General Stock Index:** It's a statistical indicator used in measurement and reporting of changes in the market value of group of stocks/shares. (Business dictionary, 2010).
4. **Inflation Rate**: a measure of how fast the overall price level is rising. (Delong, 2002).
5. **Industrial production Index**: a broad measure of production in manufacturing, mining, and utilities, is pro-cyclical and coincident. (Abel & Bernanke, 2001).
6. **Interest Rate**: the price at which purchasing power can be shifted from future into the present, borrowed today with a promise to pay it back with interest in the future. (Delong, 2002)
7. **Money Supply (M1)**: is the amount of money available in an economy. M1 is the most narrowly defined official money measure, it consists primarily of currency and balances held on checking accounts. (Abel & Bernanke, 2001).
8. **Macroeconomics**: the branch of economies that examine the economic behavior of aggregates- income, emplacement, output and so on, on a national scale. (Case & Fair, 2004).

Abstract

The Impact of Macroeconomic Factors on the Performance of General Stock Index In Jordan During the Period (1994 – 2009)

Mutah University 2010

The study aimed to examine the impact of some Macroeconomic Factors on the performance of Amman Stock Exchange. And explore the relationship between each of them.
To accomplish the above objectives this study employed quantitative approach represented by the econometric analysis (Time Series Analysis) of monthly data during the period (1994 - 2009).
The researcher applied Augmented Dickey-fuller test to trace the stationarity and Granger Causality test to find the relationship between the variables after that the Impulse Response Function has been applied to determine the response for the effects between variables.

The results shows that all the variables Stationary with 1^{st} difference.
Money Supply, Inflation and Consumer Price Index Granger Cause the General Stoke Index. Where as Industrial Production, Exchange rate and Interest rate doesn’t Granger Cause the General Index.
For the Impulse Response Function General Stock Index respond to Money Supply, Industrial Production, Inflation and Consumer Price Index, while there was no respond to Exchange Rate and Interest Rate.

ملخص

تأثير عوامل الاقتصاد الكلي على أداء المؤشر العام للأسهم في الأردن خلال الفترة(1994 - 2009)

منال محمد العتيق

جامعة مؤتة 2010

هدفت الدراسة لاختبار مدى تأثير بعض عوامل الاقتصاد الكلي وأداء سوق عمان المالي. ولتحقيق هذا الهدف تم تطبيق النهج الكمي المتمثل في التحليل الاقتصادي (تحليل السلاسل الزمنية) من البيانات الشهرية للفترة (1994 - 2009).

طبق الباحث اختبار ديكي فوللر لإيجاد جذر الوحدة للمتغيرات ومن ثم طبق اختبار جرانيجر للسببية لإيجاد العلاقات بين المتغيرات وبعدها اختبار ردة الفعل لتحديد الاستجابة بين المتغيرات.

وقد أثبتت نتائج الاختبار وجود جذر وحده للمتغيرات عند الفرق الأول ووجود علاقة سببيه وردة فعل ظاهرة بين عرض النقد والتضخم والرقم القياسي لأسعار المستهلك مع المؤشر العام للأسهم، وعدم وجود علاقة أو ردة فعل ظاهرة بين الإنتاج الصناعي، سعر الصرف ومعدل الفائدة والمؤشر العام للأسهم.

Chapter One
Introduction

1.1 Introduction

Historically the development of stock markets associated with the economic and industrial development experienced by most countries of the world, particularly capitalist countries.

In France, for example, the first stock exchange market appeared in 1724 by royal decree, and in Britain the work of stock exchanges settled in the early nineteenth century in a special building called the (Royal Exchange Market).

In the United States of America the first stock exchange has been established in 1821 and the street itself, place in which these transactions took place in the past, a Wall Street.

While the Amman Financial Market was established in 1976 and started its first day of business on January 1st, 1978 as a legally and financially independent public financed institution under the patronage of the ministry of finance. As independent and nonprofit institution (Shibli, 1999).

Later in May 1997, a new securities law has been divided AFM's activities and functions into three bodies:

1- Jordan Securities Commission (JSC)
2- Amman Stock Exchange (ASE)
3- Securities Depository Center (SDC).

(Investment Banking and Capital Markets, 2002).

Stock markets become a subject of concern in the developed and developing countries alike because these markets play an important role in mobilizing national savings and direct investment in different channels working to support the national economy and increase the rates of wealth of its citizen.

There is a large number of researches studied stock markets and the factors that influence the performance of the market which is reflected in the stock prices.

Previous studies have dealt extensively with Macroeconomics factors as a major influence on the stock market, but it did not consider all the factors together, it considers few factors, in average four variables; like (Humpe & Macmillan, 2007) who used industrial production, the consumer price index, money supply, long term interest rates and stock prices to study the effect of Macroeconomic variables on stock market movement in the US and Japan.

These studies have taken the relationship between the Macroeconomic variables and Stock prices.

It also study the Risk Diversification or Performance for investments in different stock markets according to their size or correlation to other stock markets. This is similar to (Sedik & Petri , 2006) who studied the performance of the Amman Stock Exchange (ASE) and its integration with other two markets of the main regional stock markets Kuwait and Saudi Arabia.

This research examines the impact of the Macroeconomic Factors on General Stock Index of Amman Stock Exchange during the period (1994-2009) using monthly data. The research will consist of five chapters, chapter one includes the introduction that contains the problem statement, objectives and importance of the research. Chapter two deals with the Theoretical Framework and Literature Review, Jordan economy, Macroeconomic Factors, Financial Markets and some Macroeconomic theories that will be used in testing the relationship between the variables.

Chapter three represents the Design and Methodology which include the test used in this study, sample and data collection beside the Hypotheses of the research. Chapter four consist of the Empirical Results and analysis Finally chapter five will contain the Conclusion and Recommendations for the future.

1.2. The Problem of the Research

Analysts and experts attributed the decline in the performance of ASE during the last period to the delay in the disclosures of listed companies in the market, and the brokers were forcing dealers to sell in order to correct the situation of their financial position.

The indicator's performance of ASE during 2009 witnessed a decline compared with 2008 and that is because the world financial crisis.

The general index declined about 11.6%, the market value for the listed shares declined with 11.3% and the trade volume decline with 52.4% during 2009. (Central Bank of Jordan, 2009).

From the researcher point of view this decline in the performance due to many factors outside the market. One of these factors is the Macroeconomic Factors like interest rate and inflation rate that have a negative effect on the performance of the market.

From studying the economic theories, for example Money Supply has a huge impact on the stock markets. Money supply play a role in defining the inflation or changing the interest rate according to its amount of money supply.

Money supply can affect the stock's demand which can change its prices and the supply. Finally, it can affect the performance of the market.

This lead to answer the following question:

1. What is the impact of Macroeconomic Factors on the performance of General Stock Index of ASE?

From this question we can determine some Macroeconomic Factors, like Money Supply, Interest rate Inflation and other factors.

Previous studies in Jordan like (Maghayreh, 2003) select factors include foreign reserves, interest rate, inflation and industrial production to study the relation between Stock prices and Macroeconomic Variables.

There is a need to study the effect between Macroeconomic Factors and ASE from another side with different factors.

1.3 Research Objectives

The focus of this research is on investigating the impact of the Macroeconomic Factors on the performance of ASE during the period (1994 – 2009) inclusively.

There was few studies about this subject in Jordan, (Yousouf, 2008), (Al Moghrabi, 2007), (Al-Sharkas, 2004) and (Maghayreh, 2003) examined the relationship or the effect between Macroeconomic factors and ASE during different periods, it started from 1980 to 2006.

This research attempt to examined the effect on different and latest period to find new result or support the pervious one.

The specific objectives of this study are:

1. To examine the impact of Macroeconomic Factors on the performance of General Stock Index in ASE.

1.1 To examine the impact of Money Supply on the performance of General Stock Index in ASE.

1.2 To examine the impact of Industrial production on the performance of General Stock Index in ASE.

1.3 To examine the impact of Inflation on the performance of General Stock Index in ASE.

1.4 To examine the impact of Consumer Price Index on the performance of General Stock Index in ASE.

1.5 To examine the impact of Exchange rate on the performance of General Stock Index in ASE.

1.6 To examine the impact of Interest rate on the performance of General Stock Index in ASE.

2. Compare the result of this study with some Economic Theories like Quantity Theory of Money, Efficient Market Hypotheses and Transmission Mechanisms to support its credibility.
3. Find the type of market which ASE follow from the types of efficient markets.

1.4 The Importance of the Research

This research optimizes to eliminate the ambiguity that covers some operations within ASE through declaring the variables that affect the stocks and trying to find its effect on the performance.

The researcher observed some volatility with the performance of ASE, and during the last two years there was a steady decline in the level of the performance, this decline could be because of:

1. The fear from dealing with ASE for the first time by new investors.
2. The religion settings that control any financial contract in Jordan.
3. The situation of shortage of some information on new kind of trade that just appear about 30 years ago for some investors.
4. The lack of information about knowing exactly how and when individuals can invest on ASE according to the Economic conditions.

The lack of studies that deal with the effect of Macroeconomic Factors on ASE drive the researcher to study it, in attempt to measure the largest possible number of factors from the Macroeconomic factors.

(Yousouf, 2008), (Al Moghrabi, 2007), (Al-Sharkas, 2004) and (Maghayreh, 2003) whom examined the relationship or effect between ASE and Macroeconomic variables study some variables but not all of them.

Their variables were Payment Balance ,Interest rate , budget deficit ,gross domestic product , the Number of Employees, the size of the company, inflation rate, Interest rate, Money supply, the real economic activity, exports, foreign reserves and industrial production.

While this research add the Consumer Price Index , the Exchange rate and the Industrial production as a new variables that affect the performance of ASE.

With new combination between the additional variables and some of the studied variables from the pervious studies the researcher attempt to find different measure to judge the degree of manipulation on ASE during the period of the study.

For the period of the study its an interaction between the periods of previous studies and a new period from 2007 to 2009, and that will give a new information about the performance of ASE.

1.5 The Variables of the Research

The choice of variables is almost similar to (Humpe &Macmillan, 2007), (Nikkinen &Sahlström, 2001), Kandir (2008) Globally.

As in Jordan (Yousouf, 2008), (Al Moghrabi, 2007), (Al-Sharkas, 2004), (Maghayreh, 2003).

Dependant variable :

1. General Stock Index in ASE.

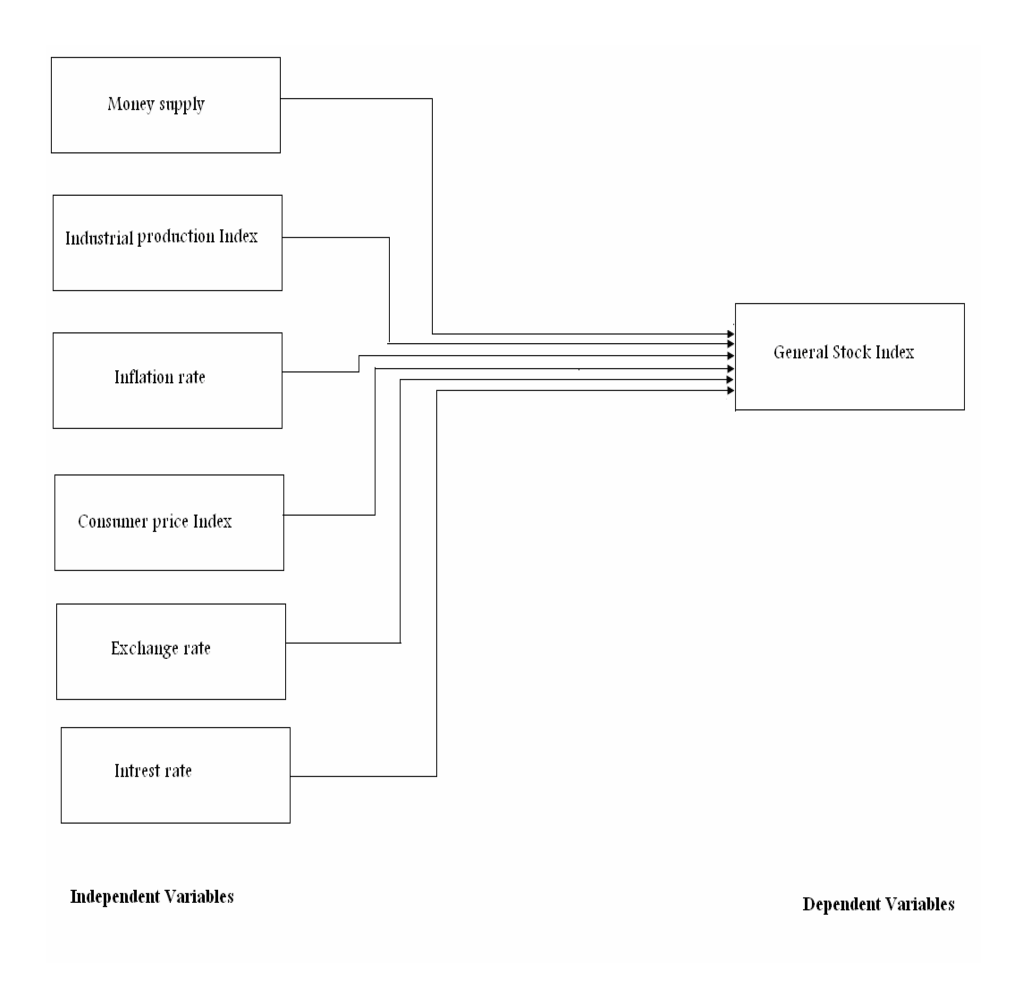
Independent variables :

1. Money Supply
2. Industrial Production Index
3. Inflation Rate
4. Consumer Price Index

5. Exchange Rate
6. Interest Rate

1.6 Research Model

Figure1.1
Research Model



1.7. Study limitations

The study does not include all the Macroeconomic Factors that affect stock prices.

Because of the large number of variables , the difficulty of getting information about all the variables, and the shortage of recording all the data needed from the resources beside the limit of time.

There is other factors can affect the Stock market beside the Macroeconomic Factors and there are many criteria thats affect the stock prices like social factors, political and physiological factors for workers and investors in stock market.

The last limit for this study was the shortage of studies that take this subject the performance of Jordanian stock market in its view, and the difficulty of getting studies about Jordan.

Chapter Two
Literature Review and Previous Studies

2.1. Macroeconomic Factors

A picture for the impact on the General Stock Index of Amman Stock Exchange performance by the Macroeconomic Factors comes from knowing the meaning of macroeconomic variables, what the major changes that happened through 1994 to 2009 in them and the changes on the General Stock index.

After that we need to know what is the financial market, some of the major markets in the region and a closer view on ASE.

It's the analysis of a nation's economy as a whole, using such aggregate data as price levels, inflation, and industrial production. (Downes and Goodman, 2003).

This is the Macroeconomics definition according to many books and references, or it can be a study for the general economic behavior not partially or for individual. (Dawood et al, 2005).

In this study the researcher uses wider variety of the macroeconomic variables, and following will be a summary about these variables and its incidence at the period of the study in Jordan.

2.1.1. Money Supply (M1)

It's the total stock of money in the economy, primary consisting of (1) currency in circulation and (2) deposits in saving and checking accounts, the increase in money supply would increase the General Stock Index by increasing the demand on stocks which raise its prices. (Downes and Goodman, 2003).

Figure(2.1) shows that the money supply move up slowly until 1999 and then it started moving rapidly to reach 6039.5 million JD at the end of 2009.

Money Supply increased with 466.5 million JD (8.4%) to became 6,039.5 million JD by the end of 2009, compared with an increase of 739.9 million JD (5.3%) in 2008.

The increase was because of the rise in deposits and circulation of money.

(Central Bank of Jordan, 2009).

The volume of money determines the price level.(Ajuzie et al, 2008), and from the Quantity theory of money point of view the increase in the money supply results in a change in the equilibrium position of the money with respect to other assets.

Moreover, because the stock is an asset and it's price has a random walk, we can apply the Quantity Theory of Money on it.

The increase of money supply excess supply of money balances which increases the demand on stocks which give its prices and expectation to rise.

This interaction between Money Supply and stock prices that has been described by the money theory, in which the increase of the Money supply leads to an increase the demand on stock and it's prices, and that would raise the General Index to improve the Performance of Amman Stock Exchange.

Figure 2.1
Money Supply

Source: Prepared by the researcher.

2.1.2. Industrial production (IP)

The indicator measures the amount of output from the manufacturing, mining, electric and gas industries. From the figure it's upward increase through the period of the study with a sudden decrease in 2003 from 126.717 in 2002 to 115.958 in 2003, because of the lack of security and political stability in the region.

According to a report by Global Investment House "Global" The Index of Industrial Production in the Kingdom has witnessed an upward trend increase after a decline in 2003, and trend attributed to the return of the export to Iraq after the U.S. invasion in 2003.
(Global, 2008).

According to the bulletin issued by the Jordanian Department of Statistics that the decline resulted from decline in the manufacturing production increased by 9.6%.

(Middle East Al-Arab International newspaper, 2003) In many countries, a common proxy of GDP is industrial production (IP) which is often recorded at monthly frequency, unlike the GDP which is measured quarterly or yearly.

In this study the researcher use IP as a proxy of GDP, economists are sometimes forced to use variables that proxy GDP and that are available at a higher frequency. (Chowdhury et al, 2009) also use Industrial Production Index (IP) as a proxy for GDP.

According to studies IP movements caused stock prices like (Nishat et al, 2004) who observed in case of industrial production and stock prices and it was the largest positive determinant of Pakistani stock prices.

Figure 2.2
Industrial Production

Industrial Production Quantity Index (1994 = 100)

180. 160. 140. 120. 100. 80. 60. 40. 20. .

1990 1995 2000 2005 2010

Industrial Production Quantity Index (1994 = 100)

Source: Prepared by the researcher

2.1.3. Inflation Rate:

The changes in the general level of prices often affects the amount of money, higher prices, especially if significant, lead initially to increase the speed of money circulation and then increase the amount of money at the end.

As consequences of inflation, there would be a devaluation of national currency, it loses its function as a measure of the value, wealth saver and

it's negatively affecting the investment process, and then expands the effects in the production. In addition, the devaluation of the national currency against foreign currencies leads to distortion of economic relations with the outside world.

This would increase the rate of dependence on external debt, and deepening the relations of dependency to the global market and falling under the control of foreign monopolies.

A report by Global Investment House "Global" said that the Inflation rate in Jordan has taken a growing trend since 2003 until the end of 2006, up from 1.6% to 6.3%, registering a compound annual growth rate by 4.4 %.

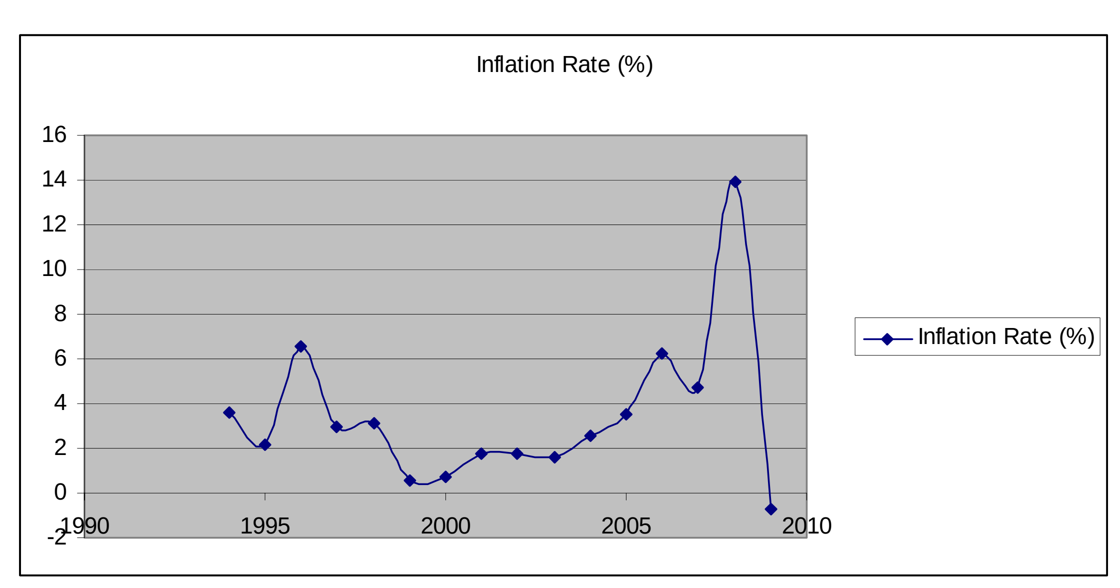
(Al Gad Newspaper, 2008).

The relationship between Inflation and markets performance will be expected to be negative. The increase in funds for the consumption will decrease the amount of investment and then lower the demand on shares, that will damage the performance of the market.

Figure (2.3) shows the amount of inflation in Jordan for the period of the study is clear and we can realize the irregular movement that reach a high point at 1996 and back to the regular amount which is around 1 to 2 percent, to go back to increase in 2005 to reach the highest point 6.25% in 2008, Based on the figures issued by the Central Bank of Jordan, the oil and electricity, the main reason for high rates of inflation in the first five months of 2008, as their prices rose by 44.3%.

The inflation declined after that to the minimum point at 2009 to reach – 0.7%.

Figure 2.3
Inflation Rate



Source: Prepared by the researcher

2.1.4. Consumer Price Index (CPI)

CPI the most commonly used measure of the cost of living. It measure the cost of a slowly changing basket of consumer goods. (Delong, 2002).

Changes in CPI are used to assess price changes associated with the cost of living, and its used to denote the periods of inflation when it rises during a short period of time.

An almost constant increasing in the CPI is clearly shown in Figure (2.4), it reaches the highest point at 2008 and refers to rise in the essential goods prices and a decline in the luxury prices which is against the normal situation, and because the consumption of the essentials doesn't change the CPI from reaching this point. It refers back to decline in 2009, most analysts attribute the decline to lower energy prices and weak domestic consumption, while the Kingdom suffer from the repercussions of the global slowdown. (Central Bank of Jordan, 2009).

Previous studies like (Nikkinen et al, 2001) examined the consumer price index with some Macroeconomic variables and found that the Information releases of macroeconomic had a great impact on the stock market.

Figure 2.4
Consumer Price Index

Source: Prepared by the researcher

2.1.5. Exchange Rate

Jordan has chosen to peg its currency against the dollar formally in 1995 at 709 piaster to the dollar, which encouraged the flow of savings abroad, support foreign direct investments and services sector.

While the Exchange rate is constant, the researcher use it to examine a new variable impact on the ASE performance, and to find the impact form the ASE on it or if there is any relation to determine the type of efficiency for the market. Also it's a channel from the Transmission Mechanism channels which we compare with in this study.

Figure 2.5
Exchange rate

JD Exchange Rate End of Period JD / $US

.71
.709
.708
.707
.706
.705
.704
.703
.702
.701
.7
1990 1995 2000 2005 2010

JD Exchange Rate End of Period JD / $US

Source: Prepared by the researcher

2.1.6. Interest Rate:

It's the rate of interests charged for the use of money, usually expressed at an annual rate. The interest rate usually moves upward or downward to help controlling the money supply, when the interest rates increase, it means curbing borrowing and thus reduce the proportion of liquidity in the market, thereby reducing the rate of inflation (rising prices), And this would affect the General Stock Index.

This figure shows the changes in The Interest rates on certificate deposits (3 months) in Jordan for the years (1994 – 2009) which shows a significant fluctuation during the years 1994 to 1999 and then moving downward till now.

Although the Jordanian Dinar pegged to the U.S Dollar, the Central Jordanian Bank didn't match the U.S Federal in interest reduction, and that was because of difference between each country, and to allow the margin of interest rate on the Dinar to rise. That will protect the exchange rate and the balance of payments. (Central Bank of Jordan, Report about the stability of the financial sector in Jordan, 2009).

As with the views of the monetary transmission mechanism, when the interest rate increase it will affect the cost borrowing and will reduce demand for consumption and investment, and it will decrease the demand for stocks. but the explanation of the finding that there is no response between Interest and General Stock Index is because of the connection between exchange rate with the interest rate in Jordan. And that the Jordanian interest is pegged to the federal rate, like the Jordanian Dinar is pegged to the US Dollar.

Figure 2.6
Interest Rate

Interest Rates on Certificates of Deposit (3 Months)

Source: Prepared by the researcher

And this lead to changes in the General Stock Index through the period of the study, according to the hypotheses in this study which says that the macroeconomic variables affect the performance of the stock markets.

Its clearly supported by the changes in the latest indicators, and its shown in the following figure (2.7), the Index increased modestly to 2004 to reach the highest point 4259.7 at 2005 and then back to decreasing till now.

Financial analysts discuss this issue, they mentioned that 2009 was a disappointed year for stock market because of the huge decline, they also declares that the Index achieved a remarkable gains through 2004 and 2005. They attributed this to the control of individual investments and liquidity. ("The negative performance", 2009).

Figure 2.7
Amman Stock Exchange General Index (ASE)

Source: Prepared by the researcher

The General Index weighted by the market value was decreased in 2009 by 723 point (11.6%) from the natural level.

This decline was a result of bank sector index draw back with 2,012.1 point, and also the retreat of the service sector index with 165 point (8.8%). (Annual Report, 2009).

2.2. Financial Markets

A Stock exchange can be defined as an organized market for buying and selling financial instruments, including stocks, bonds, options, futures, and derivatives. It is also the place where firms' stock prices are determined (Brigham & Houston, 2000).

Financial market consists of money market and capital market. Money market is the markets for debt securities that will pay off in short term. Capital markets are the markets for long term debt. (Ross et al, 2008).

Financial markets can be further classified into primary and secondary markets, primary which is used when governments and corporations initially sell securities and secondary which involves transactions from one owner or creditor to another.

There are also two basic types of stock exchanges, the physical location exchange, like the New York Stock Exchange (NYSE); or the electronic dealer based exchanges, like the NASDAQ.

In this study the researcher dealt with the performance of the Stock market as a valuable source of information which is more helpful than just using the prices of the stock for decisions.

Empirical studies show how the price of stock under the pressure of Macroeconomic factors is a base for the information.

As the market responds immediately to the information available there are different responses, according to them the literature divided the efficiency into three types, the weak form, the semi-strong and strong form, for example (Aga and Kocaman, 2008) composed an Index to test weak form of efficiency and they found that the return can be explained only by constant term, which means Istanbul Stock Exchange is weakly efficient.

2.2.1. Development of Amman Financial Market

Amman Financial Market was established in 1976 and started its first day of business on January 1, 1978 as a legally and financially independent public financed institution under the patronage of the ministry of finance. As independent and nonprofit institution.(Shibli, 1999).

Later in May 1997, a new securities law has been divided AFM's activities and functions into three bodies:

1. Jordan Securities Commission (JSC).
2. Amman Stock Exchange (ASE)
3. Securities Depository Center (SDC).

(The Jordanian Economy, 2002).

1. Jordan Securities Commission (JSC)

It's stated by the virtue of Securities Law No. (7) of 2002 as a legal entity aims in particular to protect investor's securities, and organize the capital market and improve it to ensure fairness, efficiency and transparency.

Also the protection of the capital market risk, which may be subjected.

In order to achieve their goals, tasks and powers the following key: -

1. Regulate and control the issuance of securities and dealing in them.
2. To ensure full and accurate issuers disclosure of essential information necessary for investors and the public on the steady flow of Securities.
3. Regulate and control the disclosure including the periodic reports prepared by the exporters.
4. Regulating licensing, accreditation and monitoring the activities of licensed and certified in the capital market.
5. Organize and monitor the market and trading of securities markets.

2. Amman Stock Exchange (ASE)

A private, non-profit organization with legal and financial independence, it is in charge of running the market. It was established on March 11, 1999, as a result of the restructuring process of the Jordan Capital Market.

The ASE observes international standards of fair practice in the orderly transaction conduct of the market.

The Amman Stock Exchange has two separate tiers of stocks that are traded, it was established, so that an investor can readily know the status of the company he wants to invest in and the requirements it has fulfilled.

It also promotes the transparency of the ASE and the companies traded in the stock exchange. (Amman Stock Exchange, 2010)

3. Securities Depository Center (SDC)

This has a legal personality with financial and administrative autonomy, commenced operation in May 1999 and is the only entity in Jordan that is legally empowered by the virtue of Securities Law No. (76) of 2002, with financial and administrative independence to own movable and immovable properties and dispose of them and to do all legal actions necessary to achieve its goals, including the conclusion of contracts with the right to sue and be sued. (Security Depository Center, 2010)

For the capital market it has a significant share in the process of economic reform that have taken place in Jordan**,** the issuance of the Securities Law No. 23 of 199, was the beginning of the process of reforming and restructuring of the market according to international standards**.**

This law and its modification were abolished and was replaced by the Temporary Virtue of Securities Law No. (76) For 2002.

Legislative regulatory and technical developments reflected positively on the performance of the national capital market. The records would prove this by the increase of ASE market value from 3862 million JD in 1997 to reach about 22.6 billion JD at the end of 2009 which was a huge increase. Although this increase, there was a decline with 12% at the same period in 2008 where the market value was 25.4 billion JD.

(Wda'afe, 2008).

Table 2.1
Comparison of the performance of ASE

	1997 *	2002 **	2009 ***
Market value	3862 million JD	4752.5 million	22.6 billion JD
Trading volumes	355,2 million JD	747.6 million JD	9.7 billion
General Index	1692	172.7	5520.1
The number of listed companies	139	167	272

* (Wda'afe, 2008)
** (Seyam, 2002)
***(Securities Depository Center report, 2009)

2.3 Theories related to the Study

2.3.1. Quantity theory of money

The quantity theory of money is the theory that money supply has a direct, proportional relationship with the price level.

The theory was challenged by Keynesian economics, but updated and reinvigorated by the monetarist school of economics.(Wikipedia, 2010)

The original theory was considered orthodox among 17th century classical economists and was overhauled by 20th-century economists Irving Fisher, who formulated the equation:

MV = PT (the Fisher Equation)

Each variable denotes the following:

M = Money Supply
V = Velocity of Circulation (the number of times money changes hands)
P = Average Price Level
T = Volume of Transactions of Goods and Services

After that Milton Friedman made a contributions to monetary economics, the demand for money and joint the work with Anna J. Schwartz in a empirically work, he made theoretical and empirical analyses of the Phillips Curve, monetary policy and monetary dynamics. And this was discussed in (Lothian, 2009) study, Milton Friedman's Monetary Economics and the Quantity-Theory Tradition.

Friedman built principle of "equation of exchange", It shows the relationship among money supply, the income velocity of money, the GDP deflator, and real GDP.

(Hussein, 2006), (Quraishy,2008), (Reem Heakal, 2005) (Dawood et al, 2005) and (Ajuzie et al, 2008) discussed the quantity theory of money, and have the same opinion that the theory states that there is a direct

relationship between the quantity of money in an economy and the level of prices of goods and services sold. The consumer pays twice as much for the same amount of the good or service, and they moved about buying more assets because they don't want to have save money without return on it.

According to Quantity Theory of Money (QTM), if the amount of money in an economy doubles, price levels also double, causing inflation. This is to say that inflation is a monetary phenomenon. In other words, when too much money purchases few goods we experience general price level increases, which lead to inflationary pressures and to inflation.

The theory depend on some assumptions, researchers have a different points of view about it, (Mustafa, 2009) discuss it as :

1. the demand on money is a derived demand from demand on products and services.
2. the real value of money (purchasing power) depends on the relation between amount of money and products and services that can bought by it.
3. the stability of transactions volume.
4. the stability of money cycles.

While (Ajuzie et al, 2008) divide it the theory three categories as , First, changes in money stock, leads to changes in spending. Second, the value of velocity of circulation depend not on the amount of money available or on the current price level but on changes in price levels. Finally, the quantity theory assumes that real GDP is determined by the availability of labor, capital, natural resources, knowledge, and entrepreneurship, In other words, the quantity theory assumes that in the long run the economy tends to full employment.

2.3.2. Transmission Mechanism

The monetary transmission mechanism describes how policy-induced changes in the nominal money stock or the short-term nominal interest rate impact on real variables such as aggregate output and employment.

(Ireland, 2006).

Specific channels of monetary transmission operate through the effects that monetary policy has on interest rates, exchange rates, equity and real estate prices, bank lending, and firm balance sheets.

(Taylor, 2000) reviewed how empirical models of the monetary transmission mechanism are actually used for policy evaluation.

One view of the monetary transmission mechanism, is the financial market price, This view stresses the impact of monetary policy on the prices and rates of return on financial assets and thereby on the spending decisions of firms and households.

Another view of the monetary transmission mechanism, is the credit. It places emphasis on changes in lending by banks and other financial intermediaries as an alternative to internal finance.

Monetary policy can affect the economic activity through transmission channels, the key channels used at this study is the interest and the exchange channels.

1. Interest rate channels

Increasing the interest will affect the cost borrowing and will reduce demand for consumption and investment, and will slow the growth of economy in the short run.

2. Exchange rate channels

Changing interest rate can alter the change in exchange rate , but in Jordan because of the linkage between US fed rate and Jordanian Interest rate , and the stability of the exchange rate the exchange rate is not a significant channel for transmitting monetary policy to economic activity. The effect of monetary policy on the stock market here seems insignificant.

2.3.3. Efficient Market Hypothesis

Financial researchers reviewed the efficient market hypothesis, they cared about Market efficiency which refers to the speed and accuracy with which current market prices reflect investor expectations.

(Akintoye, 2008), (Clarke et al, 2001), (Ross et all, 2008) and other researchers agreed that the efficient markets hypothesis (EMH) is the proposition that current stock prices fully reflect available information about the value of the firm, and there is no way to earn excess profits by using this information.

The efficient market hypothesis is associated with the idea of a “random walk,” which is a term loosely used in the finance literature to characterize a price series where all subsequent price changes represent random departures from previous prices. (Malkiel, 2003)

The first time the term "efficient market" was in a 1965 paper by E.F. Fama who said that in an efficient market, on the average, competition will cause the full effects of new information on intrinsic values to be reflected "instantaneously" in actual prices.

The key reason for the existence of an efficient market is the intense competition among investors to profit from any new information.

EMH has very important implications for investors as well as for financial managers.

Many investors, including investment managers, believe that they can select securities that will outperform the market. They use a variety of forecasting and valuation techniques to aid them in their investment decisions.

The validity of the hypothesis has been questioned by critics who blame the belief in rational markets for much of the financial crisis of 2007–2010. Defenders of the EMH caution that conflating market stability with the EMH is unwarranted; when publicly available information is unstable, the market can be just as unstable

Financial researchers distinguished among three versions of the Efficient Markets Hypothesis, **(**Clarke et al, 2001**)** divided them as:

1. Weak Form Efficiency

The weak form of the efficient markets hypothesis asserts that the current price fully incorporates information contained only in the past history of prices.

2. Semi-strong Form Efficiency

The semi-strong-form of market efficiency hypothesis suggests that the current price fully incorporates all publicly available information. Public information includes doesn't only past prices, but also data reported in a company's financial statements (annual reports, income statements, filings for the Security and Exchange Commission, etc.), earnings and dividend announcements, announced merger plans, the financial situation of company's competitors, expectations regarding macroeconomic factors (such as inflation, unemployment), etc.

3. Strong Form Efficiency

The strong form of market efficiency hypothesis states that the current price fully incorporates all existing information, both public and private (sometimes called inside information).

2.4. Previous Studies

(Pilinkus, 2010)

This study introduced the concepts of stock market and macroeconomic indicators, and then presented a model of the impact of macroeconomic indicators on stock market index, and defined what macroeconomic indicators are related with stock market index in the short and long runs.

The study investigated ten macroeconomic indicators and the main Baltic stock market indices. The data were monthly and extended from the January 2000 to the December 2008. Empirical research has been conducted with the Baltic States: Lithuania, Latvia, and Estonia. With the reference to the results of performed analysis the interpretations of the relationships between macroeconomic indicators and stock market index from the viewpoint of investors have been formed.

As a result of this article, the model of the impact of macroeconomic indicators on stock market index has been created. Granger causality exists between some macroeconomic indicators and stock market indices in the Baltic States. The causality relations seem to be different as to what can be

explained by different monetary and fiscal policies of the countries. The short-term relationship was proved by vector autoregression , the multiple impact of macroeconomic indicators on stock market index of the countries is explained only by 37% (Lithuania), 39.9% (Latvia), and 36.4% (Estonia). The long-term relationship was disclosed by Johansen multiple co-integration and the relationship between the stock market indices and nearly all macroeconomic indicators exhibit a reliability of 99%.

(Abdul Rahman et al, 2009)

This study explored the interactions between selected macroeconomic variables and stock prices for the case of Malaysia in a Vector Autoregressive VAR framework. They reinvestigated the impact of exchange rate on stock market based on monthly data from 1985 – 2008.

Some conventional econometric techniques have been applied along with a battery of complementary tests to trace out both short and long run dynamics. Upon testing a vector error correction model, they show that changes in Malaysian stock market index do perform a co-integrating relationship with changes in money supply, interest rate, exchange rate, reserves and industrial production index. Their lag exclusion test shows that all six variables contributed significantly to the co-integrating relationship. This shows that the Malaysian stock market is sensitive to changes in the macroeconomic variables.

Furthermore, based on the variance decomposition analysis, this paper highlights that Malaysian stock market has stronger dynamic interaction with reserves and industrial production index compared to money supply, interest rate, and exchange rate.

(Alil et al, 2009)

The study examined the causal relationship between macroeconomic indicators and stock market prices in Pakistan. Monthly data from June 1990 to December 2008 have been used to analyze the causal relationship condition of the country between various macroeconomic variables and stock exchange prices.

The set of macroeconomic indicators includes; inflation, exchange rate, balances of trade and index of industrial production, whereas the stock exchange prices have been represented by the general price index of the Karachi Stock Exchange (KSE), which is the largest stock exchange in Pakistan. The statistical techniques used include unit root Augmented Dickey Fuller test, Johansen's co-integration and Granger causality test.

The study found co-integration between industrial production index and stock exchange prices. However, no causal relationship was found between macroeconomic indicators and stock exchange prices in Pakistan. Which means that the performance of macroeconomic indicators cannot be used to predict stock prices; moreover stock prices in Pakistan do not reflect the macroeconomic.

Individually, the study found no Granger causality between KSE prices and money supply in any direction, no Granger causality between KSEP (KSE prices) and index of industrial production, no Granger causality between KSEP and exchange rate, no Granger causality between KSEP and inflation, and no Granger causality between KSEP and balance of trade. Overall, the study found no bi-directional Granger causality between macroeconomic indicators and stock exchange prices in Pakistan.

(Pilinkus, 2009)

The paper analyzed relationships between a group of macroeconomic variables and the Lithuanian stock market index, i.e. OMX Vilnius index.

The objective was to investigate whether stock prices may serve as a leading indicator for macroeconomic variables in Lithuanian economy or a group of macroeconomic variables may serve as a leading indicator for stock returns in Lithuania. Granger causality test has been employed to estimate the relationship between the OMXV index and 40 macroeconomic variables depicting the health of Lithuanian economy. The data are monthly and extended from the December of 1999 to the 2008.

The research revealed that some macroeconomic variables (e.g., GDP deflator, net export, foreign direct investment, etc.) lead Lithuanian stock market returns, some macroeconomic variables (e.g., GDP, material investment, construction volume index, etc.) are lead by the OMXV index and, finally, some macroeconomic indices (e.g., money supply, payment balance, etc.) and the stock market returns Granger-cause each other.

(Rjoub et al, 2009)

The purpose of this paper was to investigate the performance of the arbitrage pricing theory (APT) in the Istanbul Stock Exchange (ISE) on a monthly basis, for the period January 2001 to September 2005.

It's examined six pre-specified macroeconomic variables which are: the term structure of interest rate, unanticipated inflation, risk premium, exchange rate and money supply In this study, the authors developed one more variable namely unemployment rate, which has a relation with the stock return.

Using the Ordinary Least Square (OLS) technique, the authors observed that there were some differences among the market portfolios. The test results confirmed that in ten out of the 13 there were no serial correlations. It also shows that there are big differences among market portfolios against macroeconomic variables. In the remaining portfolios; there was no evidence to suggest.

(Adam et al, 2008)

The study examined the effect of macroeconomic variables on the movement of stock prices in Ghana.

The objective was to contribute to the existing literature by examining the effects of macroeconomic variables on the movement of Ghana stock market proxy by Databank Stock Index (DSI).

The researcher analyze both long-run and short-run dynamic relationships between the stock market index and macroeconomic variables including inward foreign direct investments, Treasury bills rate, consumer price index, and exchange rate by collecting quarterly data from 1991:1 to 2006:4 using Johansen's multivariate co-integration test and innovation accounting techniques. They established that there is co-integration between macroeconomic variables and stock prices in Ghana indicating long-run relationship. Further tests indicated that, in the short-run, inflation and exchange rates matter for share price movements in Ghana, however, interest rate and inflation proved to be very significant in the long-run.

The results indicated that stock prices in Ghana are consistently influenced by changes in macroeconomic variables consistent with the findings of studies in developed and emerging markets like the US, Japan, UK, Malaysia, New Zealand and Korea.

The co-integration analysis provided evidence in support of a long-run relationship between variables over the time horizon Contrary to their hypothesis; they found that inflation positively related to DSI.

(Gay, 2008)

The goal of this study is to investigate the time-series relationship between stock market index prices and the macroeconomic variables of exchange rate and oil price for Brazil, Russia, India, and China (BRIC) using the Box-Jenkins ARIMA model.

Monthly averages of respective stock market indices, foreign exchange rates, and oil price between 1999 and 2006.

Although no significant relationship was found between respective exchange rate and oil price on the stock market index prices of either BRIC countries, this may be due to the influence of other domestic and any of the international macroeconomic factors on stock market returns, warranting further research. Also, there was no significant relationship found between present and past stock market returns, suggesting the markets of Brazil, Russia, India, and China exhibited the weak-form of market efficiency.

(Kandir , 2008)

The researcher investigated the role of macroeconomic factors in Turkish

Stock returns. A macroeconomic factor model is employed on monthly data from July 1997 – June 2005, the macroeconomic variables used in this study are, growth rate of industrial production index, change in consumer price index, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and

return on the Morgan Stanley Capital International World Equity Index MSCI.

The analysis was based on stock portfolios rather than single stocks, in portfolio construction, four criteria were used: market equity, the book-to market equity, the earnings-to-price equity and the leverage ratio.

A multiple regression model was designed to test the relationship between the stock portfolio returns and seven macroeconomic factors. Empirical findings revealed that exchange rate, interest rate and world market return seem to affect all of the portfolio returns, while inflation rate was significant for only three of the portfolios. On the other hand, industrial production, money supply and oil prices didn't appear to have any significant affect on stock returns.

Istanbul Stock Exchange's (ISE) stocks were found to be related positively with the global stock market returns. Since, ISE moved toward global integration, positive relationship was not surprising. Similarly, negative effect of interest rates on stock returns was not surprising, since interest rate represented alternative investment opportunities. Although Turkey is a net importer of oil, oil did not seem to be important for Turkish companies. Oil price had always been associated with production costs. However, this finding implies the existence of more important factors of production for Turkish companies. Likewise, findings related with inflation rate seem to be inconclusive.

Although, a negative relationship was expected, Turkish stock returns did not appear to be influenced by the inflation rate. This finding may suggest that Turkish stocks cannot be used as hedge against inflation. Inconsistent with the bulk of the evidence, industrial production did not seem to affect stock returns in Turkey.

(Yousouf, 2008)

The purpose of this study was to identify the critical factors that affect stock return. Then to clarify which factor has more impact on stock return (Internal or External factors).

The study sample was consisted of companies in Amman stock exchange which are (60) companies.

The researcher used an annual data for the period 2000 to 2006.

The study found that there was significant statistical relationship between inflation rate and stock return. And there is no Significant Statistical relationship between Payment Balance sheet and stock return. There is significant statistical relationship between Interest rate and stock return.

There was no significant statistical relationship between the budget deficit and stock return.

There was no significant statistical relationship between the gross domestic product and stock return.

There was significant statistical relationship between the Number of Employees and stock return. There is significant statistical relationship between the size of the company Capital and stock return.

(Al Moghrabi, 2007)

The study sought to identify the effect of macroeconomic variables (independent variables) on the stock returns of industrial companies listed in Amman Bourse for Securities (dependent variable) , during the period extended from 1990 to2005. The study sample included 27 industrial companies representing all industrial sectors in Jordan.

The variables were inflation rate (INF) , Interest rate (NR) , Money supply (MS) and gross domestic product (GDP).

The researcher employed statistical methods to analyze results which included multiple regression, and Durbin-Watson measure for testing the automatic correlation, the study found that these variables have an impact on the financial market and GDP had the greatest impact

(Humpe & Macmillan, 2007)

The researchers examined the impact of a number of macroeconomic variables on stock prices in the US and Japan Within the framework of a standard discounted value model. Monthly data from January 1965 – June 2005 used in this study.

A Co-integration analysis was applied in order to model the long term relationship between industrial production, the consumer price index, money supply, long term interest rates and stock prices in the US and Japan. For the US they found that the data were consistent with a single co-integrating vector, where stock prices were positively related to industrial production and negatively related to both the consumer price index and a long term interest rate, they also found an insignificant (although positive) relationship between US stock prices and the money supply. However, for the Japanese data they found two co-integrating vectors they found for one vector that stock prices were influenced positively by industrial production and negatively by the money supply. For the second co-integrating vector they found that the industrial production to be negatively influenced by the consumer price index and a long term interest rate. These contrasting results may be due to the slump in the Japanese economy during the 1990s and consequent liquidity trap.

They also provided evidence that stock prices were positively related to industrial production but negatively related to the money supply. They also found that for our second vector, normalized on industrial production, that industrial production was negatively related to the interest rate and the rate of inflation.

(Günsel et al , 2007)

The objective of this paper was to investigate the performance of the Arbitrage Pricing Theory (APT) in London Stock Exchange for the period of 1980-1993 as monthly.

The study developed seven pre-specified macroeconomic variables. The term structure of interest rate, the risk premium, the exchange rate, the money supply and unanticipated inflation. Using Ordinary Least Square (OLS) technique, they have demonstrated that there were some big differences among industries. Before interpreting the OLS results, the serial correlation problem was adjusted by using Durbin – Watson Statistics. D-W statistics show that there was no evidence for positive or negative serial Correlation.

The results indicated that macroeconomic factors had a significant effect on the UK stock exchange market; however, each factor may affect different industry in different manner. That is, a macroeconomic factor may affect one industry positively, but may affect the other industry negatively.

There may be differences among dividend yields for each industry. Therefore, sectoral dividend yield was used for each industry is a good proxy for industrial profitability. This may be due to expectations, or the derivation of unexpected dividend yield. Lagged effect was present for some industries which contradict to efficient market hypothesis.

Test results also support the efficient market hypothesis for the unexpected inflation case, as there is no significant relationship between unexpected inflation and sectoral return. That is because market predicts it and incorporates into the stock prices before announcement.

Effective exchange rate, as discussed before, was an important factor for tradeable industries.

(Gan et al, 2006)

In this paper, the researchers examined the relationships between the New Zealand Stock Index and a set of seven macroeconomic variables which were monthly frequencies from January 1990 to January 2003 using co-integration tests.

Specifically, they employed the Johansen Maximum Likelihood and Granger-causality tests to determine whether the New Zealand Stock Index is a leading indicator for macroeconomic variables.

They also investigated the short run dynamic linkages between NZSE40 and macroeconomic variables using innovation accounting analyses. In general, the NZSE40 is consistently determined by the interest rate, money supply and real GDP.

The result found that there is no evidence that the New Zealand Stock Index is a leading indicator for changes in macroeconomic variables.

(Lambrick, 2006)

This paper investigated the relationship between economic variables and stock market returns in Australia at monthly intervals over the 27-year period 1974 to 2000, using returns on both an equally weighted and a value weighted market index. Sixteen variables were examined, falling into five broad categories: real, monetary/financial and external variables in addition to a price level variable and a labor market variable.

Modeling indicates that the Australian capital market underwent a protracted degree of structural change during this period, in particular during the second half of the 1980s.

Uncertain evidence suggested that two and possibly four variables were priced in the stock market over this period.

The results appeared to give uncertain support for the hypothesis that there is more than one systematic variable at work in the Australian capital market, particularly during the second half of the 1980s, when the market was undergoing a profound period of structural change.

(Menike, 2006)

This study investigated the effects of macroeconomic variables on stock prices in emerging Sri Lankan stock market using monthly data for the period from September 1991 to December 2002. The multivariate regression was run using eight macroeconomic variables for each individual stock. A multiple regression model was used to find out relationships and for examining the impact of macroeconomic variables on stock prices.

The empirical evidence found that current money supply reacts mainly positively to stock prices, exchange rate impacts predominantly negatively to stock prices, while current inflation and interest rate are significant showing a negative impact to stock prices.

The results indicated that most of the companies report a higher explanatory power of macroeconomic variables in explaining stock prices. The negative effect of Treasury bill rate implied that whenever the interest rate on Treasury securities rises, investors tend to switch out of stocks causing stock prices to fall.

(Al-Sharkas, 2004)

The researcher studied the impact of selected macroeconomic variables on Amman Stock Exchange (ASE) using the vector error correction model (VECM) (Johansen (1991)). The variables are the real economic activity, money supply, inflation, and interest rate. The empirical results showed that the stock prices and macroeconomics variables had a long-term equilibrium relationship. The study period consisted of 92 quarterly observations for each variable, from March 1980 to December 2003.

The paper provided a more appropriate framework than the standard

vector autoregressive (VAR) technique.

He also, studied the relationship between the macroeconomic

Indicators and the Jordanian stock market that can shed some light on the stock market's response to macroeconomic factors for similar emerging and industrial markets as well.

The empirical evidence showed that these macroeconomic variables

Are co-integrated i.e. there exists a co-integrating relation among the variables. The analysis of the results indicated that this co-integration relationship was consistent with the earlier findings, and the signs of the variables were also consistent with the earlier studies.

(Gunasekaragea et al, 2004)

This study examined the influence of macroeconomic variables on stock market equity values in Sri Lanka.

It use the Colombo all share price index to represent the stock market and the money supply, the treasury bill rate (as a measure of interest rates), the consumer price index (as a measure of inflation) and the exchange rate as macroeconomic variables.

They analyzed monthly data for the above variables for the 17-year period from 1985:1 to 2001:12, employing a battery of tests, which included unit roots, co-integration, vector error correction models (VECM), impulse response functions (IRFs) and variance decompositions (VDCs), To examine both long-run and short-run relationships between the stock market index and the economic variables.

The main findings revealed that there was a long run equilibrium relationship between the stock prices and some macroeconomic variables. According to the VECM model estimated in the study, the rate of inflation, the money supply and the Treasury bill rate were found to exert a significant lagged influence on the stock market index.

The VDC analyses revealed that a major proportion of the variability in the market index was explained by its own innovations while only a minority was explained by macroeconomic variables.

(Maysami et al , 2004)

The researchers examined the long-term equilibrium relationships between selected macroeconomic variables and the Singapore stock market index (STI), as well as with various Singapore Exchange Sector indices—the finance index, the property index, and the hotel index. A monthly data from January 1989 – December 2001 used to find the relation.

The study concluded that the Singapore's stock market and the property index form co-integrating relationship with changes in the short and long-term interest rates, industrial production, price levels, exchange rate and money supply.

Applying Johansen's (1990) Vector Error Correction Model (VECM), the study examines the long-term equilibrium relationships between

selected macroeconomic variables and (1)the Stock Exchange of Singapore (SES) All-S Equities Finance Index, (2)the SES All-S Equities Property Index, and (3) the SES All-S Equities Hotel Index. Additionally, the study extendd Maysami and Koh's (2000) enquiry of the co-integrating relationship between macroeconomic variables and the SES All-S Equities Index, by incorporating the effects of market volatility during the seven-year period between February 1995 and December 2001.

Their conclusions were that the Singapore stock market and the SES All-S Equities Property Index formed significant relationships with all Macroeconomic variables identified, while the SES All-S Equities Finance Index and SES All-S Equities Hotel Index form significant relationships only with selected variables Specifically, for the SES All-S Equities Finance Index, real economic activity and money supply were not significant, and in the case of SES All-S Equities Hotel Index, money supply, and short- and long-term interest rates were insignificant.

(Nishat et al, 2004)

This paper analyzed long-term equilibrium relationships between a group of macroeconomic variables and the Karachi Stock Exchange Index. The macroeconomic variables were represented by the industrial production index, the consumer price index, M1, and the value of an investment earning the money market rate. They employed a vector error correction model to explore the relationships with Quarterly data covers the period 1973:1 to 2004:4. They found that these five variables were co-integrated and two long-term equilibrium relationships exist among these variables. Their results indicated a "causal" relationship between the stock market and the economy. Analysis of their results indicates that industrial production was the largest positive determinant of Pakistani stock prices, while inflation was the largest negative determinant of stock prices in Pakistan. They found that while macroeconomic variables Granger-caused stock price movements, the reverse causality was observed in case of industrial production and stock prices.

(Maghayreh, 2003)

The researcher investigated the long run relationship between the Jordanian stock prices and selected macroeconomic variables by using Johansen's methodology in co-integration analysis and monthly time series data during the period (January 1987 - December 2000).

The study found that macroeconomic variables including exports, foreign reserves, interest rates, inflation, and industrial production were reflected in stock prices in the Jordanian capital market.

(Nikkinen et al, 2001)

They examined how the U.S. macroeconomic news released affect uncertainty in domestic and foreign stock exchanges. For that purpose, the behavior of the implied volatilities from the U.S. and Finnish markets was

investigated around the employment, producer price index (PPI) and consumer price index (CPI) reports. Monthly data from January 1996 – February 2000 were used.

The results confirmed the hypothesis that implied volatility increases prior to the macroeconomic news releases and drops after the announcement in both markets. This implies that uncertainty associated with the U.S. macroeconomic news releases were reflected in foreign stock markets as well.

Of the macroeconomic news releases, the employment report had the largest Impact on uncertainty.

Information releases of macroeconomic variables such as gross national product, inflation rate, and unemployment rate had a great impact on the valuation of financial assets.

Table 2.2
previous studies conclusion

Study	Place	Variables	Data used	Methodology	Consist with study variables results
(Pilinkus, 2010)	Baltic States: Lithuania, Latvia, and Estonia.	Number of macroeconomic variables	monthly January of 2000 to the December of 2008.	Granger causality	M1
(Abdul Rahman et al, 2009)	Malaysia	money supply, interest rate, exchange rate, reserves and industrial production index.	monthly data from 1985 – 2008.	Upon testing a vector error correction model,	M1 IP CPI
(Alil et al, 2009)	Pakistan.	inflation, exchange rate, balances of trade and index of industrial production, whereas the stock exchange prices have been represented by the general price index of the Karachi Stock Exchange (KSE)	Monthly data from June 1990 to December 2008 have	Augmented Dickey Fuller test, Johansen's co-integration and Granger causality test.	IP Inflation
(Pilinkus, 2009)	Lithuanian	40 macroeconomic variables	the December of 1999 to the 2008.	Granger causality test	M1
(Rjoub et al, 2009)	Istanbul	the term structure of interest rate, unanticipated inflation, risk premium, exchange rate and money supply	January 2001 to September 2005	investigate the performance of the arbitrage pricing theory (APT) using Ordinary Least Square (OLS) technique	Inflation
(Adam et al, 2008)	Ghana	inward foreign direct investments, Treasury bills rate, consumer price index, and exchange	1991:1 to 2006:4	using Johansen's multivariate co-integration test and innovation accounting	Inflation CPI

		rate		techniques	
(Gay, 2008)	Brazil, Russia, India, and China	exchange rate and oil prices	between 1999 and 2006.	using the Box-Jenkins ARIMA model	Exchange rate
(Kandir , 2008)	Turkish	growth rate of industrial production index, change in consumer price index, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and return on the Morgan Stanley Capital International World Equity Index MSCI.	July 1997 – June 2005	multiple regression model	M1 IP CPI
(Yousouf, 2008)	Jordan	budget deficit inflation Payment Balance gross domestic product size of the company Capita the Number of Employees size of the company Capital and stock return.	Monthly data 2000 to 2006	multiple regression model	Inflation
(Al Moghrabi, 2007)	Jordan	inflation rate (INF) , Interest rate (NR) , Money supply (MS) and gross domestic product (GDP).	from 1990 to2005.	multiple regression, and Durbin-Watson measure	M1 Inflation
(Humpe & Macmillan, 2007)	US and Japan.	industrial production, the consumer price index, money supply, long term interest rates and stock prices	Monthly data January 1965 – June 2005	A Co-integration analysis	M1 IP CPI
(Günsel et al , 2007)	UK	The term structure of interest rate, the risk premium, the exchange rate, the money supply and unanticipated inflation	Monthly data 1980-1993	investigate the performance of the arbitrage pricing theory (APT) using Ordinary Least Square (OLS) technique	M1 Inflation
(Gan et al, 2006)	New Zealand	interest rate, money supply and real GDP	Monthly data January 1990 to January 2003	Granger causality test	
(Lambrick, 2006)	Australia	. Sixteen variables were examined, falling into five broad categories:	Monthly data 1974 to 2000	ADF DW	

		real, monetary/financial and external variables in addition to a price level variable and a labor market variable.			
(Menike , 2006)	Sri Lankan	money supply exchange rate inflation and interest rate	Monthly data September 1991 to December 2002	multivariate regression	Inflation
(Al-Sharkas, 2004)	Jordan	the real economic activity, money supply, inflation, and interest rate.	Quarterly observations March 1980 to December 2003	using the vector error correction model (VECM) (Johansen (1991)).	M1 Inflation
(Gunase karagea et al, 2004)	Sri Lanka.	the stock market and the money supply, the treasury bill rate (as a measure of interest rates), the consumer price index (as a measure of inflation) and the exchange rate	Monthly data 1985:1 to 2001:12,	unit roots, co-integration, vector error correction models (VECM), impulse response functions (IRFs) and variance decompositions (VDCs),	M1 CPI
(Maysa mi et al , 2004)	Singapore	interest rates, industrial production, price levels, exchange rate and money supply.	Monthly data January 1989 – December 2001	Johansen's (1990) Vector Error Correction Mode	M1
(Nishat et al, 2004)	Pakistan.	industrial production index, the consumer price index, M1, and the value of an investment earning the money market rate.	Quarterly 1973:1 to 2004:4	vector error correction model	IP Inflation CPI
(Maghayreh, 2003)	Jordan	exports, foreign reserves, interest rates, inflation, and industrial production	Monthly data January 1987 - December 2000	Johansen's methodology in co-integration	IP Inflation
(Nikkin en et al, 2001)	U.S.	employment, producer price index (PPI) and consumer price index (CPI)	Monthly data January 1996 – February 2000	implied volatility	CPI

2.5. Research Hypotheses

The main hypothesis:

H1: There is a statistical effect between General Stock Index and the Macroeconomic Factors.

The Subhypothises:

H1.1: There is a significant effect between Money supply and General Stock Index.

H1.2: There is a significant effect between Industrial production Index and General Stock Index.

H1.3: There is a significant effect between Inflation rate and General Stock Index.

H1.4: There is a significant effect between consumer price index and General Stock Index.

H1.5: There is a significant effect between Exchange rate and General Stock Index.

H1.6 : There is a significant effect between Interest rate and General Stock Index.

Chapter Three
Research Design and Methodology

The main objective of this study is to examine the impact of some macroeconomic factors on General Stock Index. And explore the relationship between each of them.

To accomplish the above objectives this study employs quantitative approach. The quantitative approach is represented by the econometric analysis (Time Series Analysis) of documentary secondary data.

The data in this research will be collected from monthly and annual analytical reports from the central bank of Jordan and Amman Stock Exchange. The monthly data will cover the period (1994 – 2009).

The population of this study is all the data published by Central Bank and ASE, while the sample is the monthly data of the used macroeconomic factors and general stock index during the period of the study which is 192.

The researcher use a 1% significant probability to test the Unit root and a 5% significant for the Granger causality test.

The Macroeconomic Factors are Money supply, ,Industrial production Index, Inflation rate, consumer price index, Exchange rate and Interest rate.

3.1 Research Methodology

After gathering the data, a Vector Autoregression model will be utilized in the research by using the variables. The tests that will be used in this research will include: Unit Root Test, Granger Causality Test, and Impulse Response Function.

The general VAR process for any time series takes the form:

$$Yt = \sum_{i=1}^{n} A_i Y_{t-i} + \mu_t$$

Where:

Y_t: is the vector of endogenous variables.

A_i: The matrices of coefficients.

μ_t: is a vector white noise process.

i: is the number of lags

3.1.1. Selection the lag length

Before examining these tests, we have to choose the appropriate lag length. Including too many lags reduces the power of the test to reject the null of unit root since the increased of number of lags necessitates the estimation of additional parameters and loss of degrees of freedom. The degree of freedom decrease since the number of parameters estimated has increased and the number of usable observations has decreased. As such, the presence of unnecessary lags will reduce the power of the Dickey-

Fuller test to detect a unit root. Repeating the test with different lags between 5 – 8 until a reasonable lag length has been determined. However, the suitable lag length for monthly data is 8 lag length. (Enders, 2004, P. 191)

3.1.2. Unit Root Test

Is used to find the stationarity of the variables. Suppose we have this model: $\mathbf{Y_t = \rho Y_{t-1} + \upsilon_t}$, and we run the regression and found that $\boldsymbol{\rho = 1}$, then we say that the stochastic variable $\mathbf{Y_t}$ has a unit root (which means nonstationary). A time series that has a unit root is known as a random walk (Hamilton, 1994, PP. 435-447). However, we need to have a stationary time series in our tests, otherwise, we'll have spurious regression. To test the presence of a unit root, the researcher will apply the Augmented Dickey-Fuller Test. This test can also be used to help detect the presence of a stochastic trend (Enders, 2004, P. 156) (Cryer, 1986, pp. 9-16). If the computed ADF value exceeds the critical or tabulated value, then we fail to reject the null hypothesis that the variable has a unit root (nonstationary). However, if it is less than the critical value, then we reject the null hypothesis, so the variable will be stationary (Eviews user's guide, 2004, PP. 504-505) (Franses, 1998, pp. 80-84).

3.1.3. Granger Causality Test

The variable (X) is said to granger cause (Y) if the lags of (X) have additional predictive power above and beyond the predictive power of the lags of (Y) itself. However, it is important to note that the statement (X) granger cause (Y) doesn't imply that (Y) is the effect or the result of (X). Granger causality measures precedence and information content but doesn't indicate causality in the more common use of the term. Moreover, granger causality refers to the effects of past values of (X) on the current value of (Y). Therefore, granger causality measures whether the current and past values of (X) help to forecast or predict future values of (Y) (Eviews user's guide, 2004, P. 376) (Enders, 2004, P. 283). And shows the direction of the causality.

3.1.4. Impulse Response Function

The impulse response function (IRF) traces out the response of one variable in the VAR system to shocks in the error terms.
Suppose we have the following model:

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a32 & a_{33} \end{bmatrix} \begin{bmatrix} X_{t-1} \\ Y_{t-1} \\ Z_{t-1} \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix}$$

$$X_t = a_{11} X_{t-1} + a_{12} Y_{t-1} + a_{13} Z_{t-1} + e_{1t}$$

$$Y_t = a_{21} X_{t-1} + a_{22} Y_{t-1} + a_{23} Z_{t-1} + e_{2t}$$

$$Z_t = a_{31} X_{t-1} + a_{32} Y_{t-1} + a_{33} Z_{t-1} + e_{3t}$$

Suppose e_{1t} in equation X_t increase by a value of one standard deviation. Such a shock or a change will change (X) in the current as well as future periods. But since (X) appears in (Y) and (Z) equations, the change in e_{1t} will also have impact on (Y) and (Z). (Franses, 1998, P. 208) These tests will be examined through using Eviews package.

Chapter Four
Analysis Results

4.1. Analysis Result

In this study the researcher examined the impact of Macroeconomic variables on General Stock Index and explored the relationship and the effect between them.

To accomplish this objective this study employed quantitative approach which is represented by the econometric analysis (Time Series Analysis) of documentary secondary data.

Augmented Dickey Fuller test has been applied for the Unit root test to test the stationarity of the data using E-views software.

This test can also be used to help detect the presence of a stochastic trend (Enders, 2004, P. 156) (Cryer, 1986, pp. 9-16).

The result of this test show that Money supply (M1), Industrial production (IP), Inflation rate (Inflation) Consumer Price Index (CPI), Exchange rate (EX) and Interest rate (Interest) are stationary at 1^{st} difference with 8 lag.

Also the study has applied Granger causality test which proposed by C. J. Granger (1969). Granger proposed that if causal relationship exists between variables, they can be used to predict each other.

And at the end the Impulse response function has been applied to trace out the response of one variable to the VAR system to shocks in the error terms.

The selection of the lag length as a rule of thump was 8 because it's the appropriate lag length to use when the data is monthly represented. (Eviews user's guide, 2004, PP. 504-505) (Franses, 1998, pp. 80-84).

4.1.1. The effect between Money Supply and ASE

4.1.1.1. Unit Root test

For the Augmented Dickey-Fuller test if the computed ADF value exceeds the critical or tabulated value, then we fail to reject the null hypothesis that the variable has a unit root (nonstationary). However, if it is less than the critical value, then we reject the null hypothesis, so the variable will be stationary (Eviews user's guide, 2004, PP. 504-505) (Franses, 1998, pp. 80-84).

Augmented Dickey-Fuller test gave us that M1 is nonstationary in levels, but its stationary at its first difference with 1% significant.

ASE also is nonstationary in levels and have stationary with the first difference. As shown in table (4.1):

Table 4.1
Unit Root (M1, ASE)

	Augmented Dickey-Fuller Tabulated value					
Variable	**1%**	**5%**	**10%**	**T-statics calculated**	**H0: variable has a unit root**	**Is it Stationary?**
M1	-3.465977	-2.877099	-2.575143	3.242478	Don't reject	NO
ΔM1	-3.465585	-2.876927	-2.575051	-6.366187	Reject	Yes
ASE	-3.465014	-2.876677	-2.574917	-1.347503	Don't reject	NO
ΔASE	-3.465014	-2.876677	-2.574917	-7.110771	Reject	Yes

4.1.1.2. Granger Causality test

To determine the direction of causality and predict the Money Supply and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of M1 help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

Table 4.2
Granger Causality Test (D(ASE), D(M1))

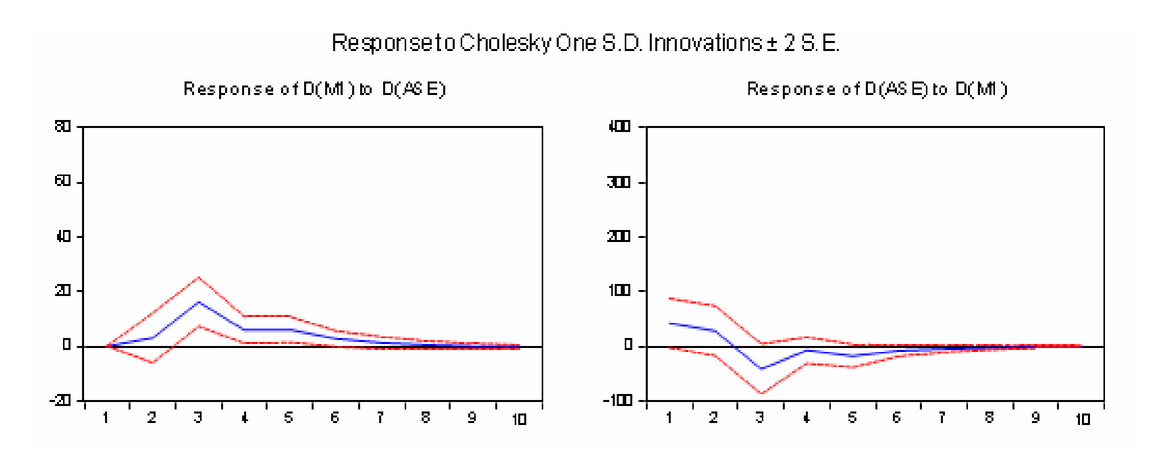
Null Hypothesis	F-Statics	Probability
D(M1) dose not Granger Cause D(ASE)	2.13779	0.0349
D(ASE) dose not Granger Cause D(M1)	2.68468	0.0084

As shown in table (4.2) D(M1) Granger Cause D(ASE) and can predict it, and D(ASE) Granger Cause D(M1)and can predict it(5% significant).

so its two- way causality. That means that the Money supply and the ASE in Jordan can forecast the movement of each other in the future whether it's going to increase or decrease.

4.1.1.3 Impulse Response Function

Figure 4.1
Impulse Response Function (D(M1), D(ASE))



The first figure shows that there is almost a significant positive effect From D(ASE) on D(M1) although it started to go down for a period but in general D(ASE) has a positive affect on D(M1).

In the other hand, as for the second figure it shows that there is almost a significant effect from D(M1) to D(ASE), however, it will be negative for a period, but it shows that it might go back again to a positive impact.

So in general D(M1) has a positive impact on D(ASE).

The previous results indicated that there was a relationship between ASE and Money supply and that is similar to what (Menike, 2006) found when he studied the Effect of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market.

(Moghrabi,2007) found the same result for Amman Stock Exchange.

(Alsharkas, 2004), (Gunasekarage et al, 2004), (Maysami et al, 2004),

(Nishat et al, 2004), (Gan et al, 2006), (Günsel et al, 2007), (Humpe & Macmillan , 2007), (Kandir, 2008), (Abdul Rahman et al, 2009), (Alil.et al, 2009), (Pilinkus, 2009) and (Pilinkus, 2010) found the same result with difference in the places and periods of their studies.

The results of this study can't be applied on all stock markets, for example (Rjoub. et al, 2009) examined the Money supply within other variables and in Istanbul Stock exchange, and he came out with a result that there was no relationship between Macroeconomic variables and stock market.

(Tobin, 1969) said that the quantity of money causing a raise in the valuation of existing capital and that would affect the equilibrium point and the decision of investors.

The volume of money determines the price level.(Ajuzie et al, 2008), and from the Quantity theory of money point of view the increase in the money supply results in a change in the equilibrium position of the money with respect to other assets.

Moreover, because the stock is an asset and it's price has a random walk, we can apply the Quantity Theory of Money on it.

The increase of money supply excess supply of money balances which increases the demand on stocks which give its prices and expectation to rise.

This interaction between Money Supply and stock prices that has been described by the money theory, in which the increase of the Money supply leads to an increase the demand on stock and it's prices, and that would raise the General Index to improve the Performance of Amman Stock Exchange.

Therefore, we can accept the first hypothesis.

4.1.2.The effect between Industrial Production and ASE

4.1.2.1. Unit Root test

For the Augmented Dickey-Fuller test if the computed ADF value exceeds the critical or tabulated value, then we fail to reject the null hypothesis that the variable has a unit root (nonstationary). However, if it is less than the critical value, then we reject the null hypothesis, so the variable will be stationary (Eviews user's guide, 2004, PP. 504-505) (Franses, 1998, pp. 80-84).

Augmented Dickey-Fuller test gave us that IP is nonstationary in levels, but its stationary at its first difference with 1% significant.

As shown in table (4.3):

Table 4.3
Unit Root (IP)

	Augmented Dickey-Fuller Tabulated value					
iable	**1%**	**5%**	**10%**	**-statics lculated**	**variable has unit root**	**t Stationary?**
IP	-3.466176	-2.877186	-2.575189	.554844	on't reject	NO
.IP	-3.466786	-2.877453	-2.575332	.370799	Reject	Yes

4.1.2.2. Granger Causality test

To determine the direction of causality and predict the IP and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of Industrial Production help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

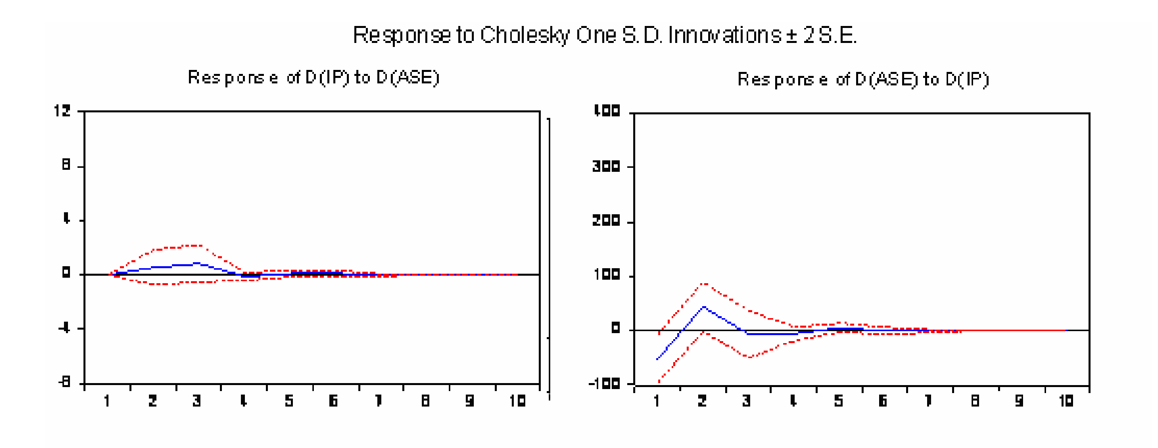
Table 4.4
Granger Causality Test (D(IP), D(ASE))

Null Hypothesis	F-Statics	Probability
D(IP) dose not Granger Cause D(ASE)	0.84845	0.5614
D(ASE) dose not Granger Cause D(IP)	0.74656	0.6503

As shown in table (4.4) D(IP) doesn't Granger Cause D(ASE) and can't predict it. also D(ASE) doesn't Granger Cause D(IP) with (5% significant). So the Industrial Production can't predict the performance of ASE.

4.1.2.3. Impulse Response Function

Figure 4.2
Impulse Response Function (D(IP), D(ASE))



The first figure shows that there is a positive effect from D(ASE) on D(IP) but it's insignificant. As for the second figure, it shows that there is a positive effect from D(IP) on D(ASE) then it started to go dawn but all that is also insignificant, and that was found by (Alil.et al, 2009) who found a positive relation between Industrial Production And stock prices in Pakistan. (Nishat et al, 2004) found that macroeconomic variables Granger-caused stock price movements, the reverse causality was observed in case of industrial production and stock prices and it was the largest positive determinant of Pakistani stock prices.

(Maghayreh ,2003), (Nishat et al, 2004), (Humpe & Macmillan , 2007), (Kandir, 2008), and (Abdul Rahman et al, 2009) also found the same results.

Therefore, we can't say that there is a relationship or any significant response between D(IP) and D(ASE).

The results were opposite to the expectations, but that may be because IP didn't represent the whole Gross Domestic Product, it just represented the production, but the researcher used it at this study because there is no monthly frequent data for GDP.

As a result, we reject the second hypothesis.

4.1.3. The effect between Inflation rate and ASE
4.1.3.1. Unit Root Test

As mentioned before about the Augmented Dickey-Fuller test, the test gave us that Inflation is nonstationary in levels, but its stationary at its first difference with 1% significant.

As shown in table (4.5):

Table 4.5
Unit Root (Inflation)

	Augmented Dickey-Fuller Tabulated value					
Variables	**1%**	**5%**	**10%**	**-statics lculated**	**variable has unit root**	**t Stationary?**
Inflation	-3.464643	-2.876515	-2.574831	.753591	on't reject	NO
ΔInflation	-3.464827	-2.876595	-2.574874	3.71511	Reject	Yes

4.1.3.2. Granger Causality Test

To determine the direction of causality and predict the Inflation and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of Inflation help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

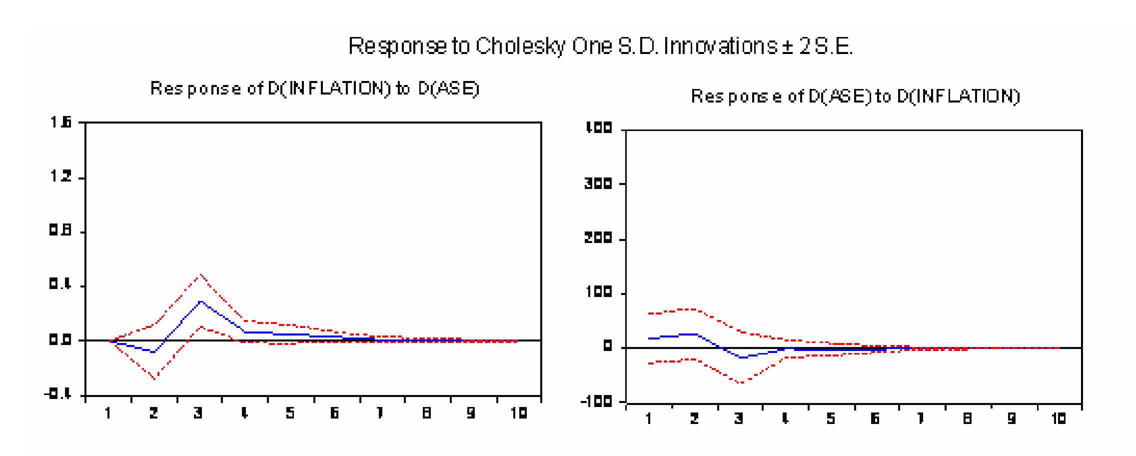
Table 4.6
Granger Causality Test (ASE ,Inflation)

Null Hypothesis	F-Statics	Probability
D(Inflation) dose not Granger Cause D(ASE)	3.41238	0.00012
D(ASE) dose not Granger Cause D(Inflation)	10.1815	2.E-11

As shown in table (4.6) D(Inflation) Granger Cause D(ASE) and can predict (5% significant) form ASE performance. and D(ASE) Granger Cause D(Inflation) and predict it (5% significant).

4.1.3.3. Impulse Response Function

Figure 4.3
Impulse Response Function (D(Inflation), D(ASE))



The first figure shows that there is insignificant negative effect from D(ASE) on D(Inflation), then it started to be almost significant positive effect.

As for the second figure, it shows that D(ASE) isn't responding to D(Inflation) shocks.

Where as (Nishat et al, 2004) found that Inflation is the largest positive determinant of Pakistani stock prices.

(Maghayreh ,2003), (Alsharkas, 2004), (Menike, 2006),), (Günsel et al, 2007), (Moghrabi,2007), (Adam et al, 2008), (Alil.et al, 2009), (Rjoub. et al, 2009) and (Yosouf, 2009) found the same results.

The changes in the Inflation result in fluctuations in ASE rate, it start with positive then negative response for a little while then moved to not responding.

This result is consistent with what come in the transmission mechanism where expectations of future inflation affect price setting (Taylor, 1999), and that would affect investors decisions and demands on stocks, this will change prices and affect the economy activity, because investors respond to actual inflation, expected inflation and monetary policy actions by changing the rate of their expected return on stocks.

Therefore, we accept the third hypothesis.

4.1.4. The effect between Consumer Price Index and ASE

4.1.4.1. Unit Root test

As mentioned before about the Augmented Dickey-Fuller test, the test gave us that CPI is nonstationary in levels, but its stationary at its first difference with 1% significant.

As shown in table (4.7):

Table 4.7
Unit Root (CPI)

	Augmented Dickey-Fuller Tabulated value					
Variable	**1%**	**5%**	**10%**	**'-statics lculated**	**variable has a unit root**	**t Stationary?**
CPI	-3.464827	-2.876595	-2.574874	.660118	)on't reject	NO
ΔCPI	-3.464827	-2.876595	-2.574874	1.02711	Reject	Yes

4.1.4.2. Granger Causality test

To determine the direction of causality and predict the CPI and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of CPI help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

Table 4.8
Granger Causality Test (ASE, CPI)

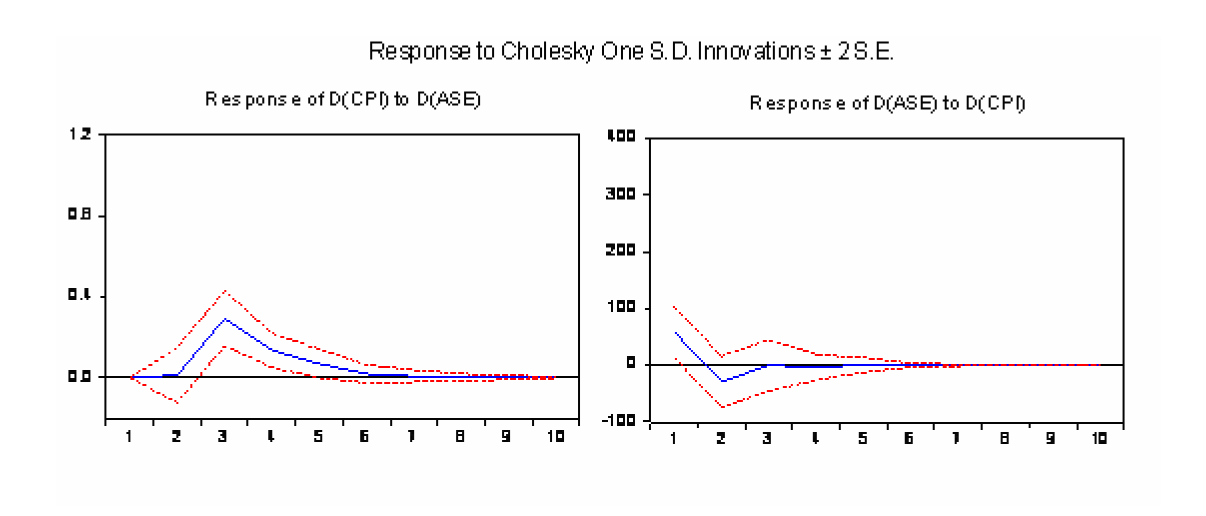
Null Hypothesis	F-Statics	Probability
D(CPI) dose not Granger Cause D(ASE)	3.20277	0.0021
D(ASE) dose not Granger Cause D(CPI)	3.61002	0.0007

As shown in table (4.8) D(CPI) Granger Cause D(ASE) and can predict it, and D(ASE) Granger Cause D(CPI)and can predict it(5% significant).

so its two- way causality. That means that the CPI and the ASE in Jordan can forecast the movement of each other in the future whether it's going to increase or decrease.

4.1.4.3. Impulse Response Function

Figure 4.4
Impulse Response Function (D(CPI), D(ASE))



For the first figure it shows that there is a significant positive response from the D(CPI) to D(ASE). While for the second figure their was a insignificant positive response from D(ASE) to D(CPI) then it goes to insignificant negative response to start not responding.

(Nikkinen et al, 2001) examined the consumer price index with some Macroeconomic variables and found that the Information releases of macroeconomic had a great impact on the stock market.

(Gunasekarage et al, 2004), (Nishat et al, 2004), (Humpe & Macmillan , 2007), (Adam et al, 2008), (Kandir, 2008) and (Abdul Rahman et al, 2009) also found the same results.

As a result, we accept the forth hypothesis.

4.1.5.The effect between Exchange Rate and ASE

4.1.5.1. Unit Root test

As mentioned before about the Augmented Dickey-Fuller test, the test gave us that Exchange rate is nonstationary in levels, but its stationary at it's first difference with 1% significant.

As shown in table (4.9):

Table 4.9
Unit Root (Ex)

	Augmented Dickey-Fuller Tabulated value					
Variable	**1%**	**5%**	**10%**	**T-statics calculated**	**variable has a unit root**	**Stationary?**
Exchange	-3.465977	-2.877099	-2.575143	2.826471	Don't reject	NO
ΔExchange	-3.466766	-2.877453	-2.575332	4.754019	Reject	Yes

4.1.5.2. Granger Causality test

To determine the direction of causality and predict the Exchange rate and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of Exchange rate help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

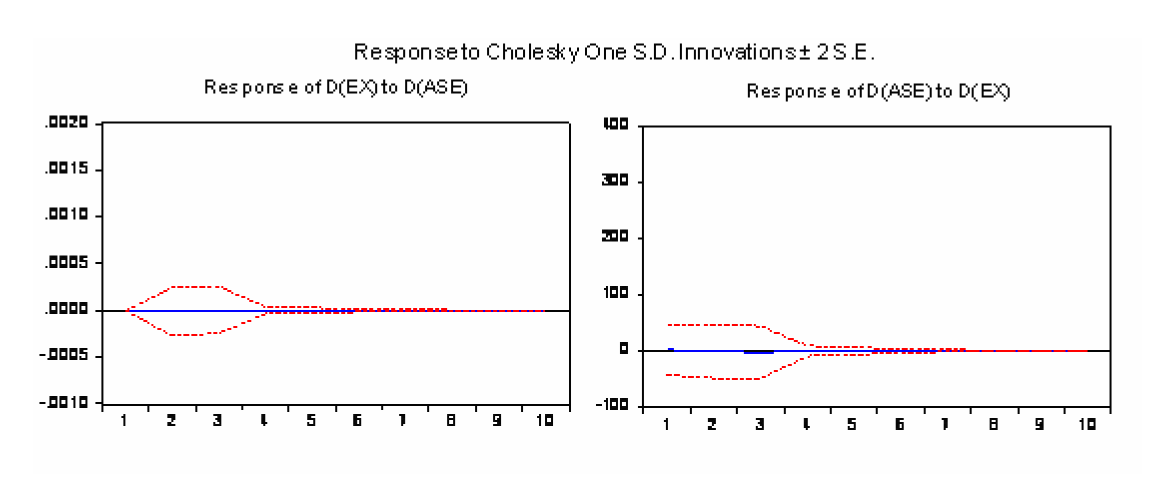
Table 4.10
Granger Causality Test (ASE, Ex)

Null Hypothesis	F-Statics	Probability
D(Ex) dose not Granger Cause D(ASE)	0.03216	0.9999
D(ASE) dose not Granger Cause D(Ex)	0.01158	1.0000

As shown in table (4.10) D(Ex) doesn’t Granger Cause D(ASE) and can't predict it, and D(ASE) doesn’t Granger Cause D(Ex) and can't predict it with (5% significant).

4.1.5.3. Impulse Response Function

Figure 4.5
Impulse Response Function (Ex)



The figures show that there is No response from the D(Ex) to D(ASE), and response from D(ASE) to D(Ex).

This result is consistent with (Gay, 2008) who found that there is no relation between Exchange rate and the stock prices in his study on Brazil, Russia, India, and China.

Exchange rate didn't respond to the changes at all because Jordanian Dinar is pegged to the US Dollar , which make it constant and doesn't affect or affected by the ASE.

For the Transmission mechanism the result was consistent with (Poddar et al, 2006**),** who examined monetary transmission in Jordan, and found that equity prices and the exchange rate were not significant channels for transmitting monetary policy to economic activity.

As a result, we reject the fifth hypothesis.

4.1.6. The effect between Interest Rate and ASE
4.1.6.1. Unit Root test

As mentioned before about Augmented Dickey-Fuller test, the test gave us that Interest is nonstationary in levels, but its stationary at its first difference with 1% significant.

As shown in table (4.11):

Table 4.11
Unit Root (Interest rate)

	Augmented Dickey-Fuller Tabulated value					
Variable	**1%**	**5%**	**10%**	**-statics lculated**	**variable has a unit root**	**Stationary?**
Interest	-3.465780	-2.877612	-2.575097	.263396	Don't reject	NO
ΔInterest	-3.466786	-2.877453	-2.575332	.877445	Reject	Yes

4.1.6.2. Granger Causality test

To determine the direction of causality and predict the Interest rate and the General Stock index granger causality test has been applied. Granger causality measures whether the current and past values of Interest help to forecast or predict future values of ASE And shows the direction of the causality.

To accept or reject the causality we should compare the probability with 5% significant, if its less or equal we reject the null hypothesis and accept the alternative one.

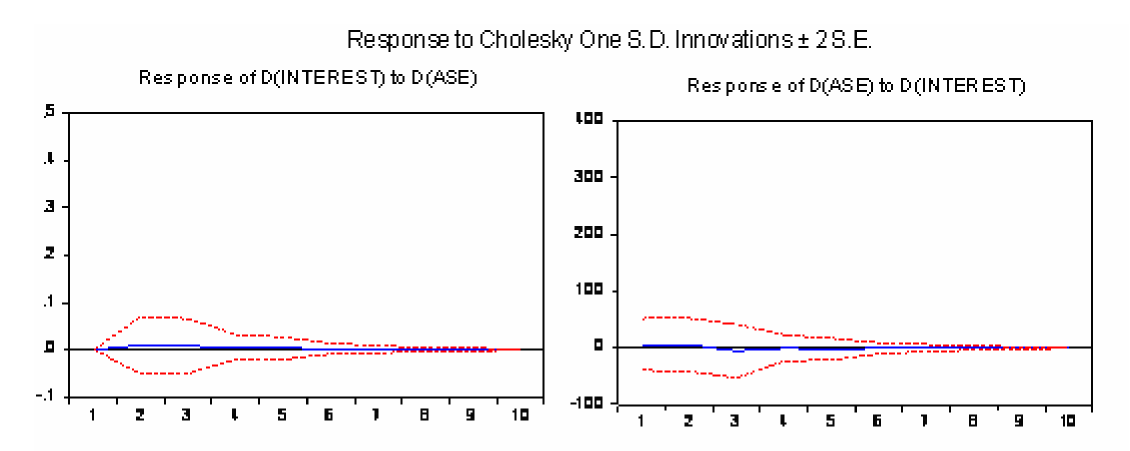
Table 4.12
Granger Causality Test (ASE, Interest)

Null Hypothesis	F-Statics	Probability
D(Interest) dose not Granger Cause D(ASE)	0.04707	1.0000
D(ASE) dose not Granger Cause D(Interest)	0.24645	0.9810

As shown in table (4.12) D(Interest) doesn't Granger Cause D(ASE) with (5% significant) so the Interest rate can't predict the ASE performance and D(ASE) doesn't Granger Cause D(Interest) too.

4.1.6.3. Impulse Response Function

Figure4.6
Impulse Response Function (D(Interest), D(ASE))



The figures shows that there isn't any significant effect or response from D(interest) to D(ASE), or for D(ASE) to D(Interest).

However, this result isn't consistent with (Maghayreh ,2003), (Gunasekarage et al, 2004), (Nishat et al, 2004), (Gan et al, 2006), (Menike, 2006), (Günsel et al, 2007), (Humpe &Macmillan , 2007), (Adam et al, 2008), (Kandir, 2008), (Yosouf, 2008) and (Abdul Rahman et al, 2009), who found that there is a positive or negative effect between the Interest rate and the general index.

As with the other views of the monetary transmission mechanism, when the interest rate increase it will affect the cost borrowing and will reduce demand for consumption and investment, and it will decrease the demand for stocks. but the explanation of the finding that there is no response between Interest and General Stock Index is because of the connection between exchange rate with the interest rate in Jordan. And that the Jordanian interest is pegged to the federal rate, like the Jordanian Dinar is pegged to the US Dollar.

As a result, we reject the sixth hypothesis.

Chapter Five
Conclusion and Recommendation

5.1. Conclusion

The objective of this research was to investigate the impact of the Macroeconomic Factors on the performance of ASE during the period (1994 – 2009).

To accomplish this objective this study employed the quantitative approach which is represented by the econometric analysis (Time Series Analysis) of documentary secondary data.

Augmented Dickey Fuller test has been applied from the Unit root test to test the stationarity status of the data using E-views software.

Also the study has applied Granger causality test . At the end the Impulse response function has been applied to trace out the response of one variable to the VAR system to shocks in the error terms.

The selection of the lag length as a rule of thump was 8 because it was the appropriate lag length to use when the data was monthly represented.

The previous results indicated that there was a relationship between most Macroeconomic variables used in this study and the ASE. And this result was consistent with (Günsel et al, 2007) who found that Macroeconomic variables had a significant effect on the UK Stock exchange and (Pilinkus, 2009) studied the Macroeconomic Indicators and their Impact on stock market performance in the Baltic States, and in other study (Pilinkus, 2010) studied the Stock market and Macroeconomic variables in Lithuania, and found that the Macroeconomic variables and stock exchange Granger Cause each others, which is the same result for this study.

With the new changes and legislations that happened in ASE through the period of the study, the technological improvements that increase the amount of information released from the market and the access by the investors to become more easier. (Wada'afe, 2008).

The released information from the market affect the external environment and had impact on the Macroeconomic variables that has been used in this study.

when the efficient market is one in which stock prices fully reflect available information. (Ross et al, 2008), the results of this study support efficient market hypotheses in many ways, moreover every variable in this study had a different response to the ASE.

We can see this effect through the obvious change to response in these variables.

Therefore, the form of the stock market here is the semi strong form in which market prices reflect all publicly available information, and in the case of here many variables can predict stock price movement.

The results also support the Quantity theory of money on demand on stocks and the change in its prices and then the performance of Amman Stock Exchange. That was clearly shown in Money Supply were the volume of money determines the price level, and the stock prices are random walk. So, the increase in money supply results in a change in the equilibrium position of the money with respect to other assets.

This increase excess supply of money balances which increases the demand on stocks to give its prices and expectation to rise.

in addition it support what come in the transmission mechanism in determining the inflation rate. where expectations of future inflation affect price setting, that would affect investors decisions and demands on stocks, this will change prices and affect the economy activity, because investors respond to actual inflation, expected inflation and monetary policy actions by changing the rate of their expected return on stocks.

There is a significant effect between General Stock Index and the Macroeconomic variables.

This study found a significant statistical effect from some of the Macroeconomic Factors and ASE. And from the Granger Causality test the study give an evidence that some Macroeconomic Factors Granger Cause ASE, and ASE Granger Cause some Macroeconomic Factors.

And there was a positive and negative response from the ASE to Macroeconomic Factors.

5.2. Recommendation

According to the results that comes from this study which are consistent with the previous studies, the researcher gives some recommendations:

1. The future researchers to take more Macroeconomic variables into account such as oil prices as they affect the Jordanian economy recently, and other variables to have different results.
2. They also can take other sides like political and technological effects on the performance of Amman Stock Exchange. As for the political and the stability of the country which may play a role in the performance of stock market, and the political events not limited to the national political issues but also take into account the regional and global events, as the twin attacks on the world Trade Center in New York and the Pentagon on September 11^{th} 2001 which had much wider impact on a large sector of the market not just the U.S financial market.
3. The investors could have an idea about how they could invest in the market, what the appropriate conditions in the market that have a good income on this investment.

4. The rational investors can take a clear view and representation about the market and the Macroeconomic variables response and use them to expect good returns.
5. For the new investors they can just learn how to concentrate on some Macroeconomic variables like Money Supply amount and distant from high interest rate.

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Appendix (I)

Jordan

Jordan

The Hashemite Kingdom of Jordan is a constitutional monarchy, ruled since 1952 by his Majesty King Hussein. With the passing of the monarch in March 1999, the King eldest son, His Majesty King Abdullah the second, ascended the throne.(General Info about Jordan, Amman Trade Point, 2009, available on: http://www.jedco.gov.jo)

The Hashemite Kingdom of Jordan is a constitutional monarchy with a representative government. Legislative power is vested in the bicameral National Assembly composed of: House of Deputies (Majlis al-Nuwaab) elected by proportional representation for four-year terms. And the House of Notables or Senate (Majlis al-Ayan) whom appointed by the King for four-year terms, which can be renewed.(Jordanian legislation, Chapter Four, Section One The King and his rights, article 36 of the Constitution.)

The government seeks to improve the welfare of its citizen and that's with the help of many indicators of security and stability achieved by its well qualified military which obviously is in Jordan more than the region countries.

All of that, beside the strategic position that Jordan posits as a Center for trade in the Middle East and markets corridor to many world markets.

One of the most important factors in the government's efforts to improve the wellbeing of its citizens is the macroeconomic stability that has been achieved since the 1990s. And this is mostly achieved in 2008 and 2009 budgets, which emphasized increases in the social safety net to help people most affected by high inflation.(Jordan at a glance, Jordan Investment Board, Available on: http://www.jordaninvestment.com/)

Jordan's Economy

Jordan's economy is mainly service oriented, it's led by an active private sector, it is free market oriented. The ownership of enterprises is largely private, the exception being public sector involvement in the mining industry. Prices (except for a few subsidized goods) interest rate, and wages are generally determined by market forces. (Jordan- Economy overview, indexmundi, November 3, 2010.)

King Abdullah has implemented significant economic reforms, such as opening the trade regime, privatizing state-owned companies, and eliminating most fuel subsidies, which in the past few years have spurred economic growth by attracting foreign investment and creating some jobs.

During the last decade, Jordan's economy has been making steady progress through the implementation of comprehensive economic reforms and restructuring programs supervised by the IMF and the World Bank.

In order to liberate the national economy and increase the flow of foreign capital, the government of Jordan has initiated a privatization program designed to activate the role and efficiency of private investors in the long-term development plans of the kingdom.

In 1996 the Telecommunication Corporation and the Jordanian electricity authority were both transformed into a public shareholding companies fully owned by the government as a first step towards full privatization. By the end of 1997, the government had sold off all its other holdings in companies where the original stake was 5% or less. The government also divested itself of its more strategic industries. Beginning with a 40% stake in the Jordan Telecommunications Company, and a 33% share in the Jordan Cement Company. 40% of state-owned Aqaba Railways has been sold to a consortium of American, Japanese and Jordanian companies.(General Info abut Jordan, Amman Trade Point, 2009, available on: http://www.jedco.gov.jo)

Trade Agreements

Jordan trade enjoys a preferential treatment through the bilateral and multilateral agreements that are signed with other countries, these agreements allows the Jordanian products to become exempted from tax within a grace period of time agreed on.
From these agreements:
1996- QIZ agreement (Qualifying industrial Zone)
1998- Arab Free Trade Agreement (AFTA)
1999- Joining the World Trade Organization (WTO), that leads to reduce the barriers for trade.
2000- Jordan - U.S. Free Trade Area Agreement (FTA)
2004- The Agadir Agreement and Free Trade Agreement with Singapore
(Jordan's Agreements website, http://www.agreements.jedco.gov.jo/)

In 2005, Jordanian economy succeeded to achieve high growth rate in gross domestic product, exceeding the non-political and economic stability of the region, and declining foreign aid to the kingdom along with high oil import bill, population growth, which amounted to about 5.4 million people, and achieved a gross domestic product at current prices for the year 2005 amounted to $ 12.7 billion and per capita was 374 dollars. This has been seen the last five years, remarkable achievements with an average annual

growth exceeding 5%, as gross domestic product grew 7.2% in 2005* and was accompanied by moderate inflation rate stood at 3.5%.
In spite of economic growth, the natural increase in the number of manpower led to high unemployment rate to reach 14.8% in 2005*.
In 2006, Jordan used privatization proceeds to reduce significantly its debt-to-GDP ratio. These measures have helped improve productivity, and have made Jordan more attractive for foreign investment.
In 2007, following parliamentary elections, King Abdullah instructed to focus on socioeconomic reform.
Jordan began developing a healthcare and housing network for civilians and military personnel, and focused on improving the educational system. Jordan faces significant challenges in that it is a small country with insufficient supplies of water, oil, and other natural resources. Poverty, unemployment, and inflation are fundamental problems.
(Almanack, Whitaker's,2009)
Jordan's conservative banking sector has been largely protected from the worldwide financial crisis, but many businesses, particularly in the tourism and real-estate sectors, are predicting a slowdown in 2009.

*Sporadic information from the department of statics

Appendix (II)
Descriptive analysis

1. Descriptive analysis

	ASE	CPI	EX	INFLATION	INTEREST	IP	M1
Mean	3346.837	89.92135	0.707786	3.453125	5.937484	120.6276	2870.437
Median	1736.460	86.20000	0.709000	2.800000	5.935000	113.4000	2153.250
Maximum	10490.80	124.7000	0.712000	13.90000	10.45000	170.4000	6111.400
Minimum	1326.500	69.30000	0.688000	-0.700000	2.100000	79.70000	1539.200
Std. Dev.	2500.468	14.02082	0.004015	3.296236	2.182793	25.97207	1417.375
Skewness	1.054251	0.897554	-3.240045	1.866611	0.035708	0.350126	0.909559
Kurtosis	2.709282	2.990272	12.73198	6.699957	2.138563	1.779689	2.381404
Jarque-Bera	36.24236	25.78007	1093.624	221.0130	5.977398	15.83608	29.53483
Probability	0.000000	0.000003	0.000000	0.000000	0.050353	0.000364	0.000000
Sum	642592.7	17264.90	135.8950	663.0000	1139.997	23160.50	551123.9
Sum Sq. Dev.	1.19E+09	37547.40	0.003078	2075.248	910.0355	128838.7	3.84E+08
Observations	192	192	192	192	192	192	192

2. Correlation

Correlation							
	ASE	CPI	EX	INFLATION	INTEREST	IP	M1
ASE	1.000000	0.841322	0.223248	0.543330	-0.143391	0.849447	0.892206
CPI	0.841322	1.000000	0.398972	0.374000	-0.241748	0.876942	0.957517
EX	0.223248	0.398972	1.000000	0.042959	-0.081834	0.351917	0.238792
INFLATION	0.543330	0.374000	0.042959	1.000000	0.124412	0.322349	0.374770
INTEREST	-0.143391	-0.241748	-0.081834	0.124412	1.000000	-0.340312	-0.248401
IP	0.849447	0.876942	0.351917	0.322349	-0.340312	1.000000	0.903620
M1	0.892206	0.957517	0.238792	0.374770	-0.248401	0.903620	1.000000